

Chapter 1

p. 458

$$1a) 290 \text{ cm} \times \frac{1 \text{ ft}}{30.48 \text{ cm}} = 9.51 \text{ ft}$$

$$0.51 \text{ ft} \times \frac{12 \text{ in}}{1 \text{ ft}} = 6.12 \text{ in}$$

9 ft 6 in

$$b) 5 \text{ yd} \times \frac{91.44 \text{ cm}}{1 \text{ yd}} = 457 \text{ cm}$$

$$c) 8 \text{ km} \times \frac{1 \text{ miles}}{1.6093 \text{ km}} = 4.971 \text{ miles}$$

$$0.971 \text{ miles} \times \frac{1760 \text{ yd}}{1 \text{ mi}} = 1708.96 \text{ yds}$$

4 miles, 1709 yards

$$d) 6500 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}} = 16510 \text{ cm}$$

$$16510 \text{ cm} \times \frac{1 \text{ m}}{100 \text{ cm}} = 165.1 \text{ m}$$

$$e) 82000 \text{ mm} \times \frac{1 \text{ cm}}{10 \text{ mm}} = 8200 \text{ cm}$$

$$8200 \text{ cm} \times \frac{1 \text{ ft}}{30.48 \text{ cm}} = 269.0 \text{ ft}$$

$$f) 16 \text{ mi} \times \frac{1.6093 \text{ km}}{1 \text{ mi}} = \boxed{25.75 \text{ km}}$$

2 a) Surface Area

$$\text{Area of triangle} = \frac{bh}{2}$$

$$= \frac{(12)(10)}{2} = 60 \text{ cm}^2$$

4 triangular sides
 $4(60 \text{ cm}^2) = 240 \text{ cm}^2$

Area of Square
 bottom = $l \cdot w$
 $= 12 \cdot 12$
 $= \cancel{144} \text{ cm}^2$

$$\text{Surface Area} = 240 \text{ cm}^2 + \cancel{144} \text{ cm}^2$$

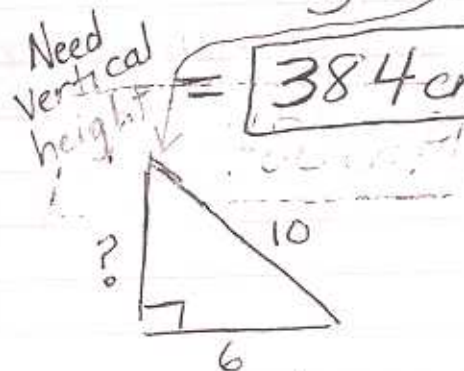
$$= \boxed{384 \text{ cm}^2}$$

Volume

$$V = \frac{l \cdot w \cdot h}{3}$$

$$V = \frac{12 \cdot 12 \cdot 8}{3}$$

$$= \boxed{384 \text{ cm}^3}$$



$$a^2 + b^2 = c^2$$

$$a^2 + 6^2 = 10^2$$

$$a^2 + 36 = 100$$

$$a^2 = 100 - 36$$

$$a^2 = 64$$

$$\sqrt{a^2} = \sqrt{64}$$

$$a = 8$$

b) Surface Area

$$SA = \pi r s + \pi r^2$$

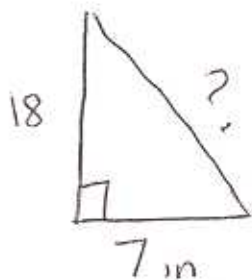
$$= \pi(7)(19.3) + \pi(7)^2$$

$$= 424.4 + 153.9$$

$$= \boxed{578.3 \text{ in}^2}$$

=

→ need "s"



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 18^2 + 7^2 &= c^2 \\ 324 + 49 &= c^2 \\ 373 &= c^2 \\ \sqrt{373} &= \sqrt{c^2} \\ \boxed{19.3 = c} \end{aligned}$$

Volume

$$V = \frac{\pi r^2 h}{3}$$

$$V = \frac{\pi(7)^2(18)}{3}$$

$$V = 923.6 \text{ in}^3$$

$$\boxed{V = 924 \text{ in}^3}$$

c) Surface Area

$$SA = 4\pi r^2$$

$$SA = 4\pi(4.5)^2$$

$$SA = 254.5 \text{ cm}^2$$

$$\boxed{SA = 254 \text{ cm}^2}$$

Volume

$$V = \frac{4\pi r^3}{3}$$

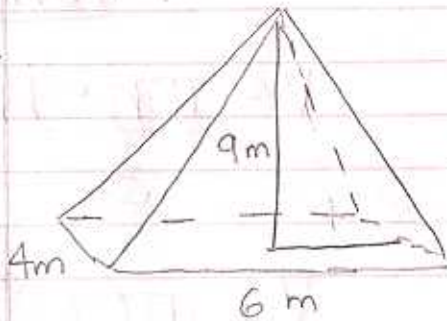
$$V = \frac{4\pi(4.5)^3}{3}$$

$$V = 381.7 \text{ cm}^3$$

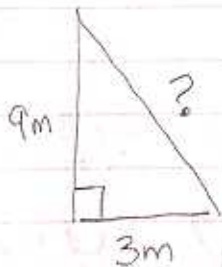
$$\boxed{V = 382 \text{ cm}^3}$$

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1.

Chapter 1



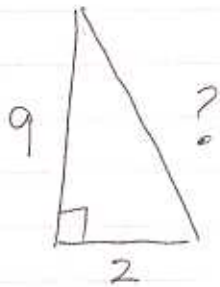
$$\begin{aligned} \text{Area of base} &= l \cdot w \\ &= 4\text{m} \times 6\text{m} \\ &= \boxed{24\text{m}^2} \end{aligned}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 9^2 + 3^2 &= c^2 \\ 81 + 9 &= c^2 \\ 90 &= c^2 \\ \sqrt{90} &= \sqrt{c^2} \\ 9.5 &= c \end{aligned}$$

$$\begin{aligned} \text{Area of triangle} &= \frac{bh}{2} \\ &= \frac{(9.5)(4)}{2} = 19\text{m}^2 \end{aligned}$$

$$2 \text{ sides this size} \\ (2)(19\text{m}^2) = \boxed{38\text{m}^2}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 9^2 + 2^2 &= c^2 \\ 81 + 4 &= c^2 \\ 85 &= c^2 \\ \sqrt{85} &= \sqrt{c^2} \\ 9.2 &= c \end{aligned}$$

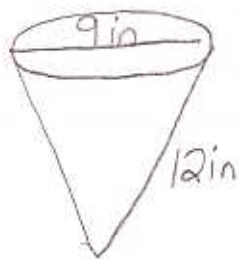
$$\begin{aligned} \text{Area of triangle} &= \frac{bh}{2} \\ (9.2)(6) &= 27.6\text{m}^2 \\ &= \frac{27.6\text{m}^2}{2} \end{aligned}$$

$$2 \text{ triangles this size} \\ (2)(27.6\text{m}^2) = \boxed{55.2\text{m}^2}$$

$$\begin{aligned} \text{Total Surface Area} &= 24\text{m}^2 + 38\text{m}^2 + 55\text{m}^2 \\ &= \boxed{117\text{m}^2} \end{aligned}$$

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2.



$$V = \frac{\pi r^2 h}{3}$$

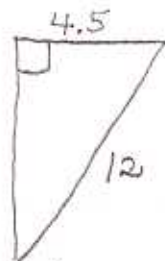
$$V = \frac{\pi (4.5^2)(11.1)}{3}$$

$$V = \frac{706.2 \text{ in}^3}{3}$$

$$V = 235.4 \text{ in}^3$$

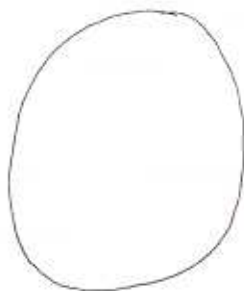
$$V = 235 \text{ in}^3$$

need h



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 4.5^2 + b^2 &= 12^2 \\ 20.25 + b^2 &= 144 \\ b^2 &= 144 - 20.25 \\ b^2 &= 123.75 \\ \sqrt{b^2} &= \sqrt{123.75} \\ b &= 11.1 \end{aligned}$$

3.a)



$$SA = 86 \text{ cm}^2$$

$$d = ?$$

find "r" to
get "d"

$$SA = 4\pi r^2$$

$$\frac{86}{4} = \frac{4(\pi)(r^2)}{4}$$

$$\frac{21.5}{\pi} = \frac{\pi r^2}{\pi}$$

$$r = 2.6 \text{ so}$$

$$d = 2(2.6) = 5.2 \text{ cm}$$

$$6.84 = r^2$$

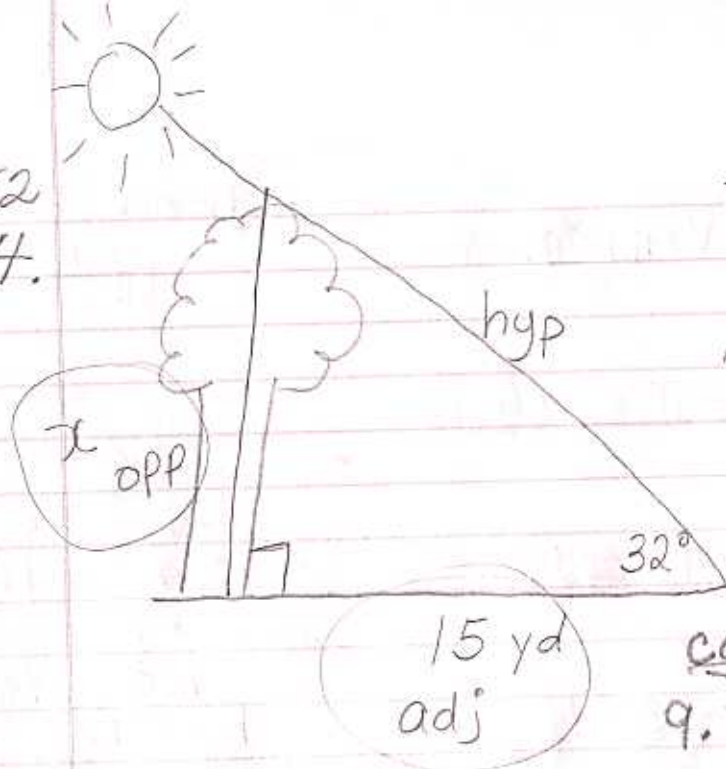
$$\sqrt{6.84} = \sqrt{r^2}$$

$$2.6 = r$$

b) $r = 2.6 \text{ cm}$ - convert to inches

$$2.6 \text{ cm} \times \frac{1 \text{ in}}{2.54 \text{ cm}} = 1.02 \text{ in} = 1 \text{ in}$$

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4.



$$\tan = \frac{\text{opp}}{\text{adj}}$$

$$\tan 32^\circ = \frac{x}{15}$$

$$15 \cdot \tan 32^\circ = \frac{x}{15} \cdot 15$$

$$15 \cdot \tan 32^\circ = x$$

$$9.37 \text{ yd} = x$$

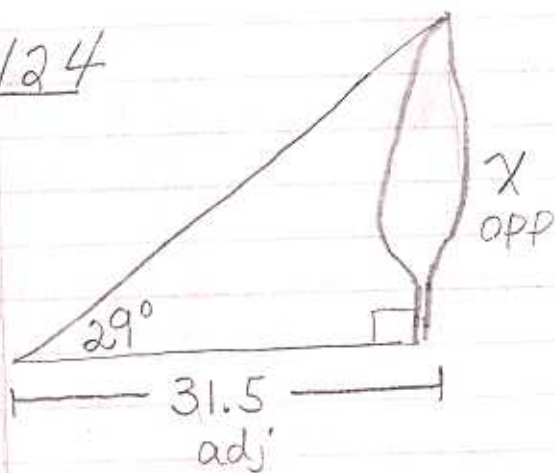
convert to feet:

$$9.37 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 28.11 \text{ ft}$$

$$= \boxed{28 \text{ ft}}$$

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8.

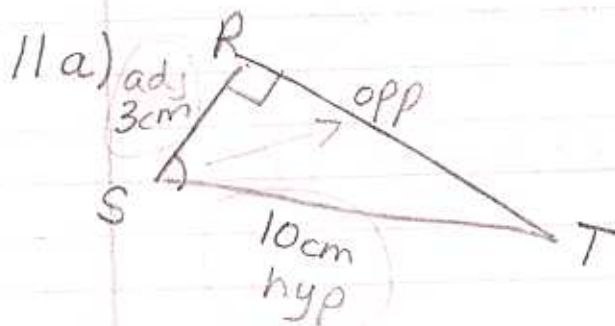


$$\tan = \frac{\text{opp}}{\text{adj}}$$

$$\tan 29^\circ = \frac{x}{31.5}$$

$$31.5 \cdot \tan 29^\circ = \frac{x}{31.5} \cdot 31.5$$

$$31.5 \cdot \tan 29^\circ = x$$



$$\cos = \frac{\text{adj}}{\text{hyp}}$$

$$\cos S = \frac{3}{10}$$

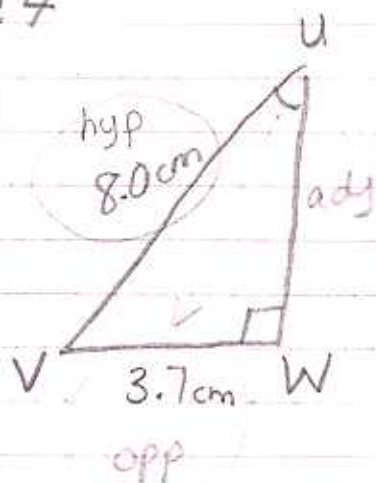
$$\angle S = \cos^{-1}\left(\frac{3}{10}\right)$$

$$\angle S = 72.5^\circ = \boxed{73^\circ}$$

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11b)



$$\sin = \frac{\text{opp}}{\text{hyp}}$$

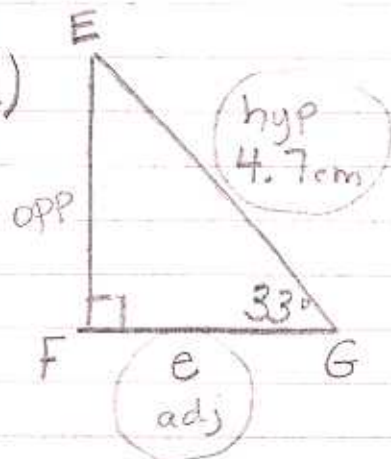
$$\sin \angle U = \frac{3.7}{8.0}$$

$$\angle U = \sin^{-1} \left(\frac{3.7}{8.0} \right)$$

$$\angle U = 27.5^\circ$$

$$\boxed{\angle U = 28^\circ}$$

15. a)

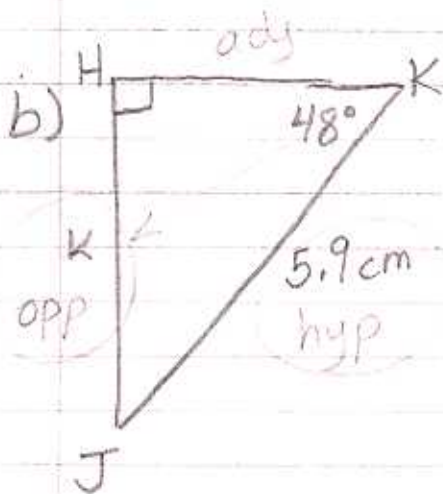


$$\cos 33^\circ = \frac{e}{4.7}$$

$$4.7 \cdot \cos 33^\circ = \frac{e}{4.7} \cdot 4.7$$

$$4.7 \cos 33^\circ = e$$

$$\boxed{3.9_{\text{cm}} = e}$$



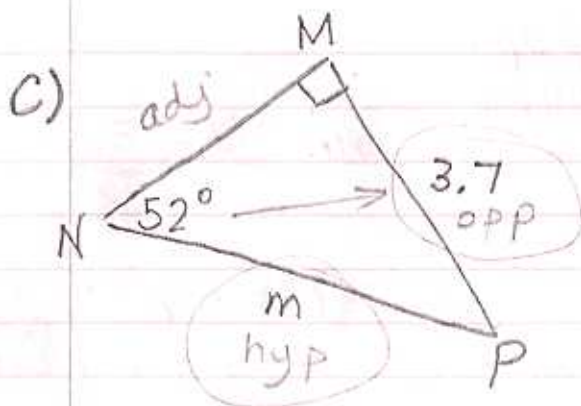
$$\sin 48^\circ = \frac{k}{5.9}$$

$$5.9 \cdot \sin 48^\circ = \frac{k}{5.9} \cdot 5.9$$

$$5.9 \cdot \sin 48^\circ = k$$

$$4.38 = k$$

$$\boxed{4.4 \text{ cm} = k}$$

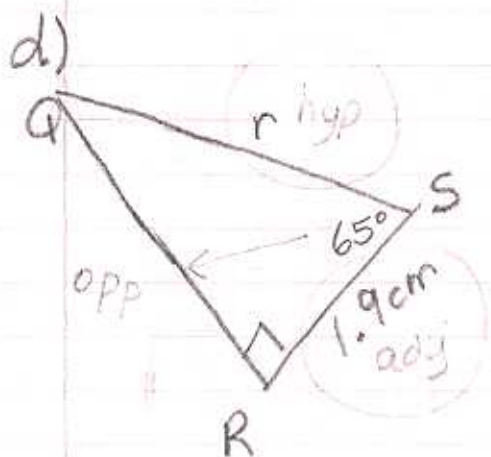


$$\sin 52^\circ = \frac{3.7}{m}$$

$$m \cdot \sin 52^\circ = \frac{3.7}{\cancel{\sin 52^\circ}}$$

$$m \cdot \frac{\cancel{\sin 52^\circ}}{\cancel{\sin 52^\circ}} = \frac{3.7}{\sin 52^\circ}$$

$$m = \frac{3.7}{\sin 52^\circ} = \boxed{4.7 \text{ cm}}$$



$$\cos 65^\circ = \frac{1.9}{r}$$

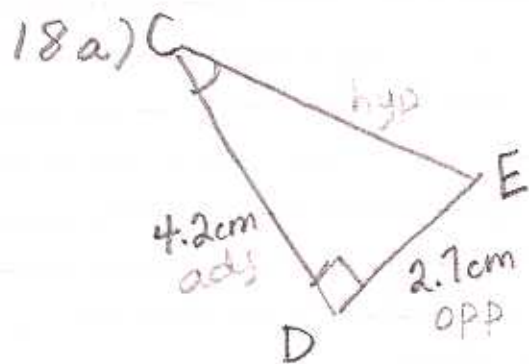
$$r \cdot \cos 65^\circ = \frac{1.9}{\cancel{\cos 65^\circ}} \cdot \cancel{\cos 65^\circ}$$

$$r \cdot \frac{\cancel{\cos 65^\circ}}{\cancel{\cos 65^\circ}} = \frac{1.9}{\cos 65^\circ}$$

$$r = \frac{1.9}{\cos 65^\circ} = \boxed{4.5 \text{ cm}}$$

5

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$$\begin{aligned} \angle C &= \\ \angle D &= 90^\circ \\ \angle E &= \end{aligned}$$

$$\begin{aligned} c &= 2.7\text{cm} \\ d &= \\ e &= 4.2\text{cm} \end{aligned}$$

$\angle C$

$$\tan \angle C = \frac{2.7}{4.2}$$

$$\angle C = \tan^{-1} \left(\frac{2.7}{4.2} \right)$$

$$\boxed{\angle C = 32.7^\circ}$$

$\angle E$

$$\begin{aligned} 180^\circ - 90^\circ - 32.7^\circ \\ = \boxed{57.3^\circ} \end{aligned}$$

Side d; (could use sin or cos)

$$\cos 32.7^\circ = \frac{4.2}{d}$$

$$d \cdot \cos 32.7^\circ = \frac{4.2}{d} \cdot d$$

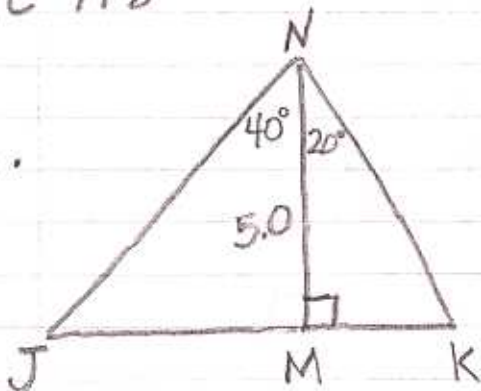
$$d \cdot \frac{\cos 32.7^\circ}{\cos 32.7^\circ} = \frac{4.2}{\cos 32.7^\circ}$$

$$d = \frac{4.2}{\cos 32.7^\circ} = 4.99\text{cm} = \boxed{5.0\text{cm}}$$

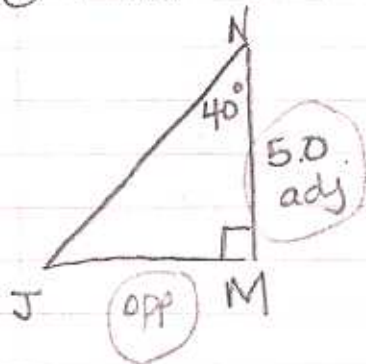
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Find \overline{JK}

3a.



① Find \overline{JM}

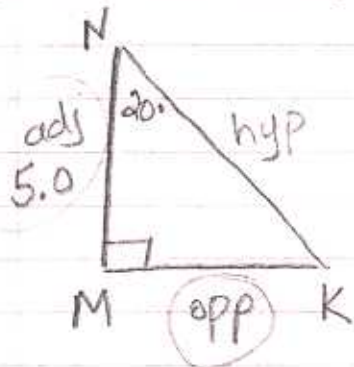


$$\tan 40^\circ = \frac{JM}{5.0}$$

$$5.0 \tan 40^\circ = \frac{JM}{5.0} \cdot \cancel{5.0}$$

$$4.2 \text{ cm} = JM$$

② Find \overline{MK}



$$\tan 20^\circ = \frac{MK}{5.0}$$

$$5.0 \cdot \tan 20^\circ = \frac{MK}{5.0} \cdot \cancel{5.0}$$

$$5.0 \cdot \tan 20^\circ = MK$$

$$1.8 \text{ cm} = MK$$

$$\begin{aligned} \textcircled{3} \quad \overline{JK} &= \overline{JM} + \overline{MK} \\ &= 4.2 \text{ cm} + 1.8 \text{ cm} \\ &= \boxed{6.0 \text{ cm}} \end{aligned}$$

Chapter 3

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7b.

$$\begin{array}{c}
 84 \\
 \wedge \\
 7 \cdot 12 \\
 \begin{array}{c} | \quad \wedge \\ 7 \cdot 3 \cdot 4 \\ \begin{array}{c} | \quad | \quad \wedge \\ 7 \cdot 3 \cdot 2 \cdot 2 \end{array} \end{array}
 \end{array}$$

$$\begin{array}{c}
 154 \\
 \wedge \\
 77 \cdot 2 \\
 \wedge \\
 7 \cdot 11 \cdot 2
 \end{array}$$

$$\begin{array}{l}
 \text{GCF} = 7 \cdot 2 \\
 = \boxed{14}
 \end{array}$$

$$\begin{array}{l}
 \text{LCM} = 7 \cdot 3 \cdot 11 \cdot 2^2 \\
 = \boxed{924}
 \end{array}$$

10a. $15a^2 - 27a$
 GCF $3a(5a - 9)$

b. $4p + 12p^3 - 6p^2$
 $2p(2 + 6p^2 - 3p)$

12a. $(d+5)(d-3)$
 $\frac{d^2 - 3d + 5d - 15}{\boxed{d^2 + 2d - 15}}$

d. $(3k-7)(2k+9)$
 $\frac{6k^2 + 27k - 14k - 63}{\boxed{6k^2 + 13k - 63}}$

13a. $x^2 + \square x + 14$

14a. $n^2 + 9n - 22$

| | |
|-----------|-----------------------------------|
| M(14) | A(\square) |
| 7, 2 | $7+2=9$ |
| -7, -2 | $-7-2=-9$ |
| 14, 1 | $14+1=15$ |
| -14, -1 | $-14-1=-15$ |
| \square | could be $\boxed{9, -9, 15, -15}$ |

| | |
|--------|-------------|
| M(-22) | A(9) |
| 11, -2 | $11+(-2)=9$ |

$$\boxed{(n+11)(n-2)}$$

14b. $60 - 19m + m^2$
 rearrange $m^2 - 19m + 60$

| | |
|---------|------------------|
| M(60) | A(-19) |
| -15, -4 | -15 + (-4) = -19 |

$$(m-15)(m-4)$$

c. $6r^2 + 23r + 20$
 $a \cdot c = (6)(20) = 120$

| | |
|--------|-------------|
| M(120) | A(23) |
| 15, 8 | 15 + 8 = 23 |

$$6r^2 + 15r + 8r + 20$$

$$(6r^2 + 15r) + (8r + 20)$$

$$3r(2r + 5) + 4(2r + 5)$$

$$(3r+4)(2r+5)$$

d. $10n^2 + n - 2$
 $a \cdot c = (10)(-2) = -20$

| | |
|--------|--------------|
| M(-20) | A(1) |
| 5, -4 | 5 + (-4) = 1 |

$$10n^2 + 5n - 4n - 2$$

$$(10n^2 + 5n) + (-4n - 2)$$

$$5n(2n + 1) - 2(2n + 1)$$

$$(5n-2)(2n+1)$$

15a. $3c^2 - 24c - 60$

$$3(c^2 - 8c - 20)$$

| | |
|--------|--------------|
| M(-20) | A(-8) |
| -10, 2 | -10 + 2 = -8 |

$$3(c-10)(c+2)$$

$$16a. (2x-3)(x^2+3x-5)$$

$$2x^3 + 6x^2 - 10x - 3x^2 - 9x + 15$$

$$\boxed{2x^3 + 3x^2 - 19x + 15}$$

$$b. (a+2b)(2a-5b-6)$$

$$2a^2 - 5ab - 6a + 4ab - 10b^2 - 12b$$

$$\boxed{2a^2 - 6a - ab - 10b^2 - 12b}$$

$$17a. (2c-5)(c+6) + (c+6)(3c-2)$$

$$2c^2 + 12c - 5c - 30 + 3c^2 - 2c + 18c - 12$$

$$\boxed{5c^2 + 23c - 42}$$

$$b. (2t-5)^2 - (2t+5)(3t-1)$$

$$(2t-5)(2t-5) - (2t+5)(3t-1)$$

$$4t^2 - 10t - 10t + 25 - (6t^2 - 2t + 15t - 5)$$

$$4t^2 - 20t + 25 - (6t^2 + 13t - 5)$$

$$4t^2 - 20t + 25 - 6t^2 - 13t + 5$$

$$\boxed{-2t^2 - 33t + 30}$$

$$18a. 25n^2 + 40n + 16$$

$$a \cdot c = (25)(16) = 400$$

| | |
|--------|-------|
| M(400) | A(40) |
|--------|-------|

| | |
|--------|--|
| 20, 20 | |
|--------|--|

$$25n^2 + 20n + 20n + 16$$

$$(25n^2 + 20n) + (20n + 16)$$

$$5n(5n+4) + 4(5n+4)$$

$$\boxed{(5n+4)(5n+4) = (5n+4)^2}$$

$$18c. \quad 24c^2 - 87c - 36$$

$$\textcircled{3}(8c^2 - 29c - 12)$$

$$a \cdot c = (8)(-12) = -96$$

$$\underline{M(-96)} \quad \underline{A(-29)}$$

$$32, -3$$

$$8c^2 + 32c - 3c - 12$$
$$(8c^2 + 32c) + (-3c - 12)$$

$$8c(c+4) - 3(c+4)$$

$$\boxed{3(8c-3)(c+4)}$$

Chapter 4

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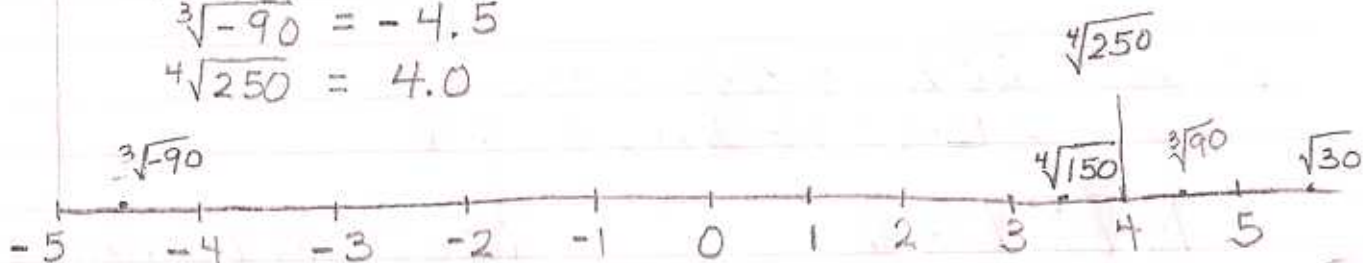
$$20. \quad \sqrt[3]{90} = 4.5$$

$$\sqrt{30} = 5.5$$

$$\sqrt[4]{150} = 3.5$$

$$\sqrt[3]{-90} = -4.5$$

$$\sqrt[4]{250} = 4.0$$



Chapter 4

21a. i $\frac{\sqrt{96}}{\sqrt{16}\sqrt{6}}$
 $\boxed{4\sqrt{6}}$

ii $\frac{\sqrt[3]{108}}{\sqrt[3]{27} \cdot \sqrt[3]{4}}$
 $\boxed{3\sqrt[3]{4}}$

iii $\frac{\sqrt[4]{144}}{\sqrt[4]{16} \cdot \sqrt[4]{9}}$
 $\boxed{2\sqrt[4]{9}}$

b. i $\frac{5\sqrt{3}}{\sqrt{52.3}}$
 $\frac{\sqrt{25.3}}{\sqrt{75}}$

ii $\frac{2\sqrt[3]{5}}{\sqrt[3]{23.5}}$
 $\frac{\sqrt[3]{8.5}}{\sqrt[3]{40}}$

iii $\frac{11\sqrt[4]{2}}{\sqrt[4]{114.2}}$
 $\frac{\sqrt[4]{14641.2}}{\sqrt[4]{29282}}$

22a) i $50^{3/4}$
 $(\sqrt[4]{50})^3$
 or
 $\sqrt[4]{50^3}$

ii $(-2.5)^{2/3}$
 $(\sqrt[3]{-2.5})^2$
 or
 $\sqrt[3]{(-2.5)^2}$

iii $(\frac{3}{4})^{1.6}$
 $1.6 = \frac{16 \div 2}{10 \div 2} = \frac{8}{5}$

$(\sqrt[5]{3/4})^8$
 or
 $\sqrt[5]{(3/4)^8}$

b. i $\sqrt[3]{8.9^2}$

$\boxed{8.9^{2/3}}$

ii $(\sqrt[4]{\frac{7}{4}})^3$

$\boxed{(\frac{7}{4})^{3/4}}$

iii $\sqrt[5]{(-4.8)^6}$

$\boxed{(-4.8)^{6/5}}$

$$23 \text{ b. } \left(\frac{36}{49}\right)^{3/2}$$

$$\left(\sqrt{\frac{36}{49}}\right)^3$$

$$= \left(\frac{6}{7}\right)^3$$

$$= \boxed{\frac{216}{343}}$$

$$\text{c. } (-0.027)^{5/3}$$

$$\left(\sqrt[3]{-0.027}\right)^5$$

$$= (-0.3)^5$$

$$= \boxed{-0.00243}$$

$$\text{d. } \left(\frac{4}{9}\right)^{-2}$$

$$\left(\frac{9}{4}\right)^2$$

$$= \boxed{\frac{81}{16}}$$

$$\text{f. } \left(\frac{25}{64}\right)^{-3/2}$$

$$= \left(\frac{64}{25}\right)^{3/2}$$

$$\left(\sqrt{\frac{64}{25}}\right)^3$$

$$\left(\frac{8}{5}\right)^3$$

$$= \boxed{\frac{512}{125}}$$

$$\text{h. } (-0.064)^{-2/3}$$

$$\left(\frac{1}{-0.064}\right)^{-2/3}$$

$$\left(\sqrt[3]{\frac{1}{-0.064}}\right)^2$$

$$= \left(\frac{1}{-0.4}\right)^2$$

$$= \frac{1}{0.16} = \boxed{6.25}$$

Chapter 4

$$\frac{5}{2} + \frac{3}{2}$$

$$\frac{8}{2} - \frac{9}{2}$$

25 c. $\frac{(0.36)^{5/2} (0.36)^{3/2}}{(0.36)^{9/2}} = \frac{(0.36)^{8/2}}{(0.36)^{9/2}} = (0.36)^{-1/2}$

$$= \left(\frac{1}{0.36}\right)^{1/2} = \sqrt{\frac{1}{0.36}} = \frac{1}{0.6} = \boxed{1.7}$$

d. $\frac{\left(-\frac{1}{8}\right)^{7/3} \left(-\frac{1}{8}\right)^{2/3}}{\left(-\frac{1}{8}\right)^{5/3} \left(-\frac{1}{8}\right)} = \frac{\left(-\frac{1}{8}\right)^{9/3}}{\left(-\frac{1}{8}\right)^{8/3}} = \left(-\frac{1}{8}\right)^{1/3} = \left(\sqrt[3]{-\frac{1}{8}}\right)^1$

$\frac{5}{3} + \frac{2}{3}$

$$= \boxed{-\frac{1}{2}}$$

26a. $\frac{(a^{-2} b^{-1})^{-3}}{a^3 b} = \frac{a^6 b^3}{a^3 b} = \boxed{a^3 b^2}$

multiply subtract

c. $\frac{-15a^{-1/2} b}{5a b^{-3/2}} = \frac{-3b \cdot b^{3/2}}{a \cdot a^{1/2}} = \boxed{\frac{3b^{5/2}}{a^{3/2}}}$

$\frac{2}{2} + \frac{3}{2}$

$\frac{2}{2} + \frac{1}{2}$

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10 a. The athlete and the sport they were in

b. i. $\{(Perdita\ Felicien, track), (Donovan\ Bailey, track), (Nancy\ Greene, skiing), (Annamay\ Pierce, swimming), (Justin\ Morneau, baseball), (Steve\ Nash, basketball)\}$

ii.



11 a) It is a function because for each x -value there is only 1 y -value. The x -value is not repeated.

b) Independent variable - v
Dependent variable - C

c) Domain - $\{1, 2, 3, 4, \dots\}$
Range - $\{1.09, 2.18, 3.27, 4.36, \dots\}$

d) $C(v) = 1.09v$

$$C(V) = 1.09V$$

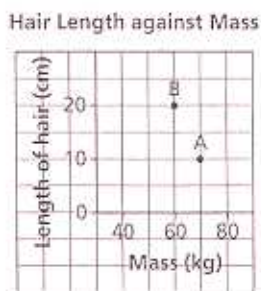
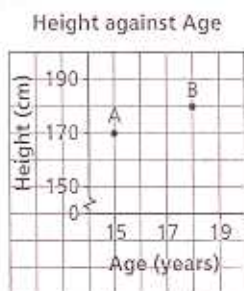
e) $C(25) = 1.09(25)$
 $C(25) = 27.25$

It represents the cost for 25 L of gas.

f) $C(V) = 1.09V$
 $\frac{50}{1.09} = \frac{1.09V}{1.09}$

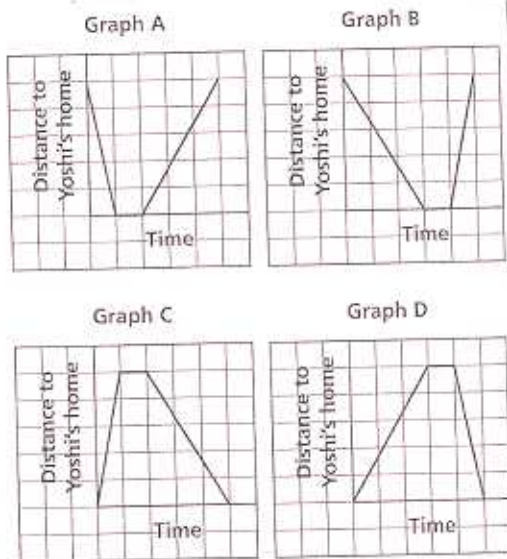
$45.9 = V$
 for \$50 you could get 45.9 L of gas

12. a) F
 b) T
 c) T
 d) F

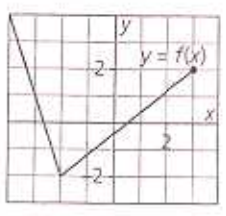


13. Graph B

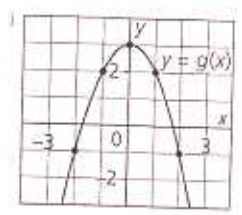
b)



14. a. $D = \{x \leq 3\}$
 $R = \{y \geq -2\}$



b. $D = \{\text{all reals}\}$
 $R = \{y \leq 3\}$

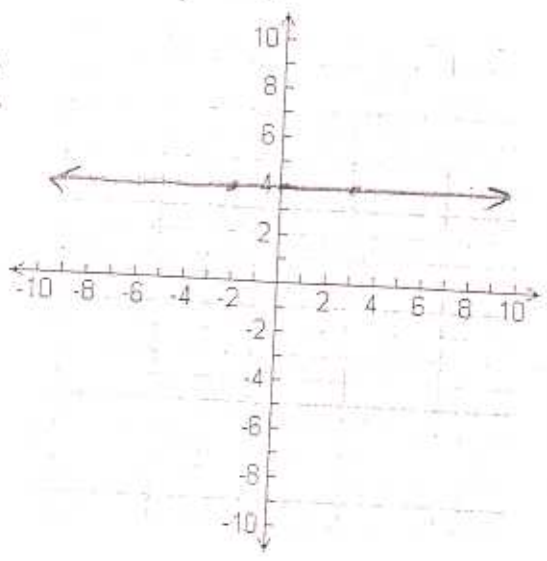


$y = 4$

$y = -2x + 1$

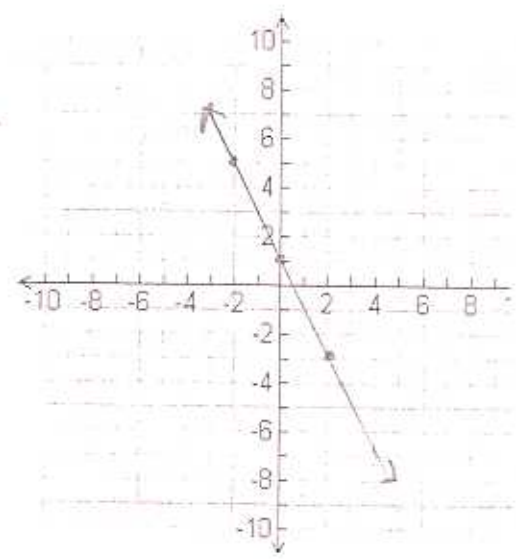
15. a. i.

| x | y |
|----|---|
| -2 | 4 |
| 0 | 4 |
| 2 | 4 |



ii

| x | y |
|----|----|
| -2 | 5 |
| 0 | 1 |
| 2 | -3 |

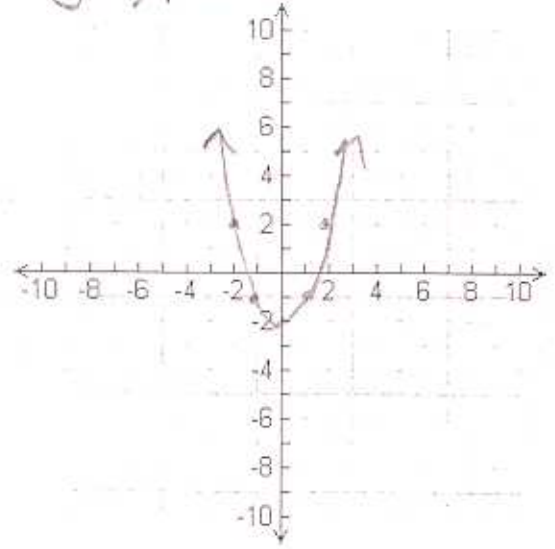


$y = x^2 - 2$

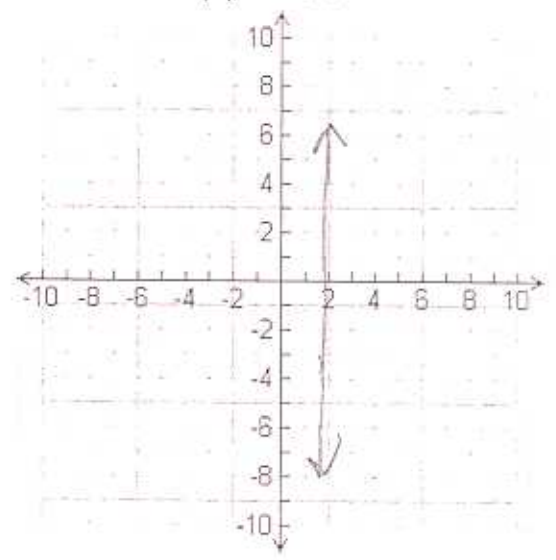
$x = 2$

iii

| x | y |
|----|----|
| -2 | 2 |
| -1 | -1 |
| 0 | -2 |
| 1 | -1 |
| 2 | 2 |



iv



15b. i, ii, iv, v are linear - exponents
on x and y are one

16a. vertical intercept = 300
(0, 300)

When no one attends the banquet
room still costs \$300

b. rate of change = $\frac{\Delta Y}{\Delta X} = \frac{600 - 300}{20 - 0} = \frac{300}{20} = \$15/\text{person}$

It costs \$15 for each person to attend.

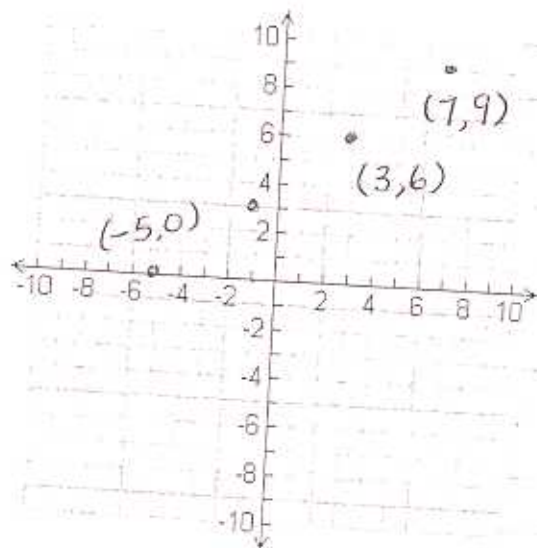
c. Domain = $\{0, 1, 2, 3, 4, 5, \dots\}$
Range = $\{300, 315, 330, 345, \dots\}$

d. \$1050

e. 25 people

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17c.



18a $W(-3, 5)$ $X(8, 3)$ and $C(6, 6)$ $D(1, 8)$
 x_1, y_1 x_2, y_2 x_1, y_1 x_2, y_2

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 5}{8 - (-3)} = \frac{-2}{11}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 6}{1 - 6} = \frac{-2}{-5} = \frac{2}{5}$$

Neither

b. $J(3, -4)$ $K(9, 2)$ and $P(5, -4)$ $Q(2, -1)$
 x_1, y_1 x_2, y_2 x_1, y_1 x_2, y_2

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - (-4)}{9 - 3} = \frac{6}{6} = 1$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - (-4)}{2 - 5} = \frac{3}{-3} = -1$$

Perpendicular - slopes are negative reciprocals.

c. $R(-3, 2)$ $S(1, -6)$ and $E(-2, 1)$ $F(-5, 7)$
 x_1, y_1 x_2, y_2 x_1, y_1 x_2, y_2

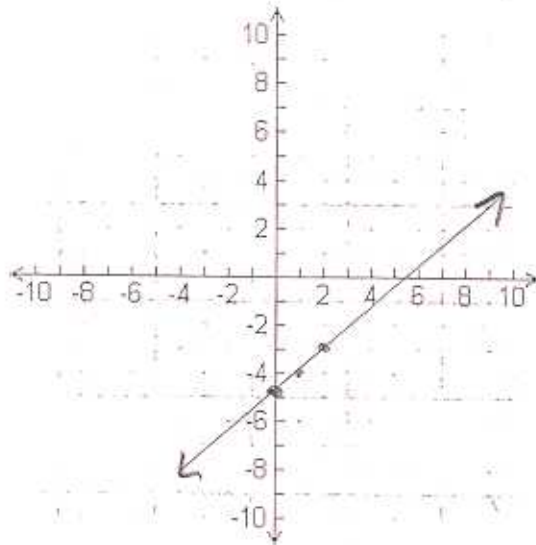
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-6 - 2}{1 - (-3)} = \frac{-8}{4} = -2$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{7 - 1}{-5 - (-2)} = \frac{6}{-3} = -2$$

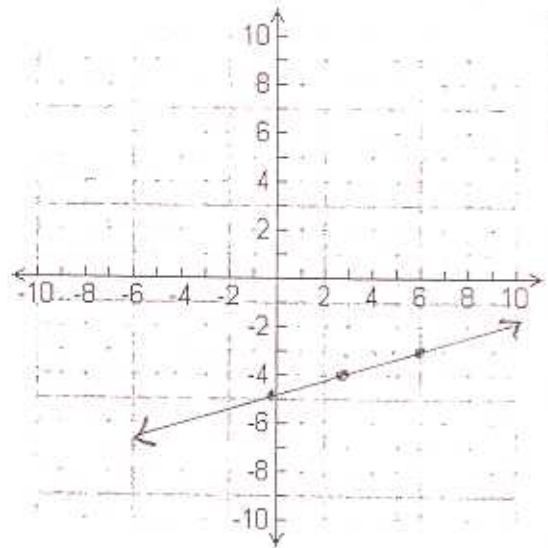
Parallel - slopes are the same.

19a

i) $y = x - 5$ $b = -5$
 $m = 1$

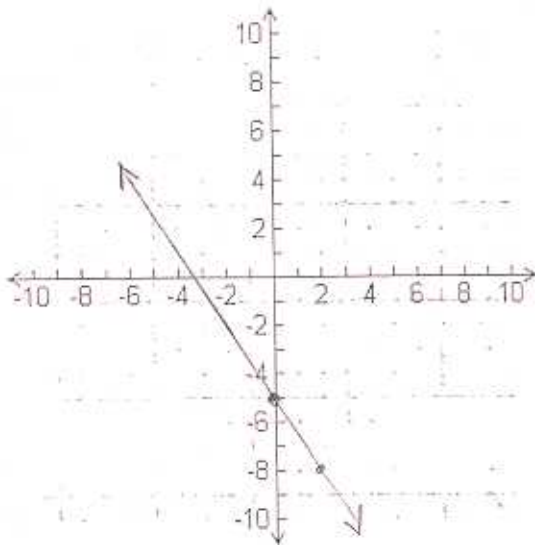


ii) $y = \frac{1}{3}x - 5$ $b = -5$
 $m = \frac{1}{3}$

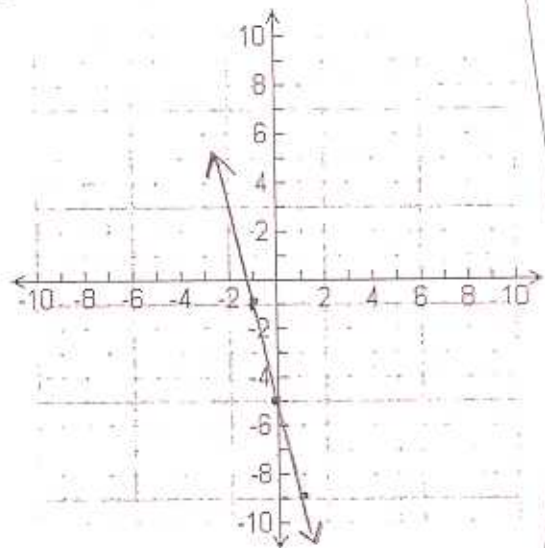


iii)

$y = -\frac{3}{2}x - 5$ $b = -5$
 $m = -\frac{3}{2}$

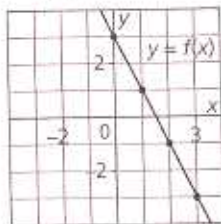


iv) $y = -4x - 5$ $b = -5$
 $m = -4$



20

$y = \frac{1}{2}x - 3$



- a) What mistakes did the student make?
b) What is the correct equation of the line?

a) $b = -3$ not $+3$
 m is -2 not $+\frac{1}{2}$

b) $b = 3$ $m = -2$

$y = -2x + 3$