

TSI Multiple Choice

TSI 33



1. Solve $14 = 8 + \frac{m}{2}$
(a) $m = -8$ (b) $m = 8$ (c) $m = 12$ (d) $m = -12$
2. Solve $\frac{7+x}{x} = 22$
(a) $x = -\frac{1}{2}$ (b) $x = \frac{1}{2}$ (c) $x = \frac{1}{3}$ (d) $x = -\frac{1}{3}$
3. Find a if $ax - 40 = x + 2$ and $x = 2$
(a) $a = 21$ (b) $a = -22$ (c) $a = 22$ (d) $a = -21$
4. Solve $6x + 20 = 2x$
(a) $x = -6$ (b) $x = 6$ (c) $x = -5$ (d) $x = 5$
5. Solve $\frac{2}{5x} + \frac{1}{x} = 21$
(a) $x = -15$ (b) $x = 15$ (c) $x = \frac{1}{15}$ (d) $x = -\frac{1}{15}$
6. Find P if $P = 2(L + W)$, $L = 10$, and $W = 6$
(a) $P = 10$ (b) $P = 30$ (c) $P = 32$ (d) $P = 31$
7. If $x = -5$, evaluate $(x + 9)(x + 5)$
(a) 10 (b) -10 (c) 0 (d) 5
8. Find $f(-1)$ if $f(x) = \sqrt{x+1} + 2$
(a) $f(-1) = 4$ (b) $f(-1) = 3$ (c) $f(-1) = 2$ (d) $f(-1) = 0$
9. Find $Pr - r$ if $p = -11$ and $r = \frac{1}{2}$
(a) 4 (b) -4 (c) -6 (d) 6
10. Find the mean of 1000, 2000, 4000, 7000, and 9000
(a) 4000 (b) 4400 (c) 4600 (d) 4500
11. Evaluate $1000(1.05)^2$
(a) 11025.0 (b) 1.10250 (c) 1102.50 (d) 11.0250
12. Simplify $\frac{a^{10}}{a^3}$
(a) a^3 (b) a^4 (c) a^7 (d) a^6



13. Simplify $-2a^3(ab^2 + b^2)$

(a) $-2a^3b^2 - 2a^2b^2$

(c) $-2a^4b^2 - 2a^3b^2$

(b) $2a^4b^2 + 2a^3b^2$

(d) $2a^4b^2 - 2a^3b^2$

14. Simplify $\left(\frac{4}{x}\right)^3$

(a) $\frac{8}{x^2}$

(b) $\frac{10}{x^3}$

(c) $\frac{64}{x^3}$

(d) $\frac{64}{x^2}$

15. If $4x^2 - 16 = m$, then $x^2 - 4 =$

(a) $-4m$

(b) $-\frac{m}{4}$

(c) $\frac{m}{4}$

(d) $4m$

16. Simplify $\left(\frac{8k}{2}\right)^2$

(a) $16k^3$

(b) $64k^2$

(c) $16k^2$

(d) $8k^2$

17. Simplify $p - 0.15p$

(a) $0.75p$

(b) $0.95p$

(c) $0.85p$

(d) $0.90p$

18. $(3x + 2y)(3x - 2y)$

(a) $9x^2 - 12xy - 4y^2$

(c) $9x^2 - 4y^2$

(b) $9x^2 + 12xy - 4y^2$

(d) $9x^2 + 4y^2$

19. $(3x - 2y)(3x - 2y)$

(a) $9x^2 - 4y^2$

(c) $9x^2 - 12xy + 4y^2$

(b) $9x^2 + 4y^2$

(d) $9x^2 + 12xy + 4y^2$

20. Factor $100x^2 - 9y^2$

(a) $(10x + 9y)(10x - 9y)$

(c) $(10x + 3y)(10x - 3y)$

(b) $(10x + 3y)(10x + 3y)$

(d) $(10x - 3y)(10x - 3y)$

21. Factor $x^2 + 6x - 7$

(a) $(x + 1)(x - 7)$

(c) $(x - 1)(x + 7)$

(b) $(x + 1)(x + 7)$

(d) $(x - 1)(x - 7)$

22. Factor $x^2 - x - 2$

(a) $(x - 1)(x + 2)$

(c) $(x + 1)(x - 2)$

(b) $(x + 1)(x + 2)$

(d) $(x - 1)(x - 2)$



23. Factor $2x^2 + 5x - 3$

(a) $(2x + 1)(x - 3)$

(c) $(2x - 1)(x + 3)$

(b) $(2x + 1)(x + 3)$

(d) $(2x - 1)(x - 3)$

24. Factor $x^3 + 6x^2 + 8x$

(a) $x(x + 2)(x - 4)$

(c) $x(x + 2)(x + 4)$

(b) $x(x - 2)(x + 4)$

(d) $x(x - 2)(x - 4)$

25. Factor GCF $3x^3 - 18x^2 + 3x$

(a) $3x(x^2 + 6x - 1)$

(c) $3x(x^2 - 6x + 1)$

(b) $3x(x^2 + 6x + 1)$

(d) $3x(x^2 - 6x - 1)$

26. Solve $x^2 - 6x - 7 = 0$

(a) $\{1, -7\}$

(b) $\{1, 7\}$

(c) $\{-1, 7\}$

(d) $\{-1, -7\}$

27. Solve $x^2 + x - 12 = 0$

(a) $\{-3, -4\}$

(b) $\{-3, 4\}$

(c) $\{3, -4\}$

(d) $\{3, 4\}$

28. Solve $\frac{x}{9} = \frac{1}{x}$

(a) $\{-1, -9\}$

(b) $\{1, -9\}$

(c) $\{-3, 3\}$

(d) $\{-9, 9\}$

29. Solve $\sqrt{x - 2} = 8$

(a) $x = -64$

(b) $x = 64$

(c) $x = 66$

(d) $x = -66$

30. Solve $\begin{matrix} 2x + 3y = 5 \\ 4x - 2y = 2 \end{matrix}$

(a) $(x, y) = (-1, -2)$

(c) $(x, y) = (1, 1)$

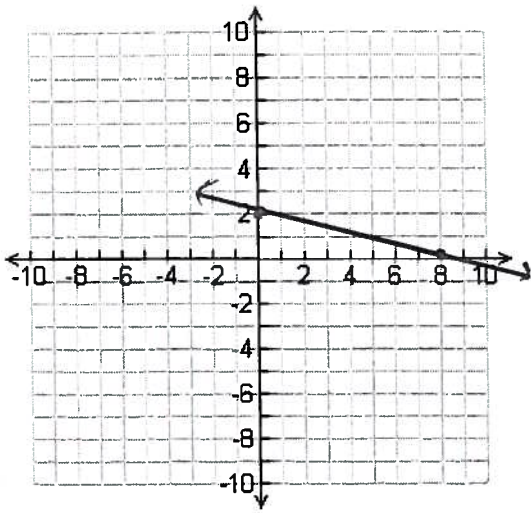
(b) $(x, y) = (1, 2)$

(d) $(x, y) = (-1, 1)$

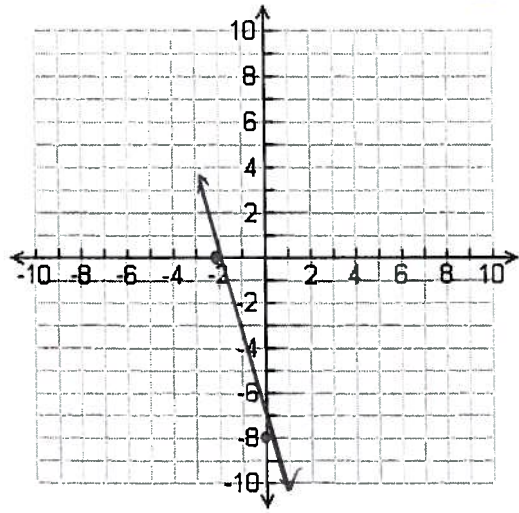
3) graph $y = 2x + 6$

4.

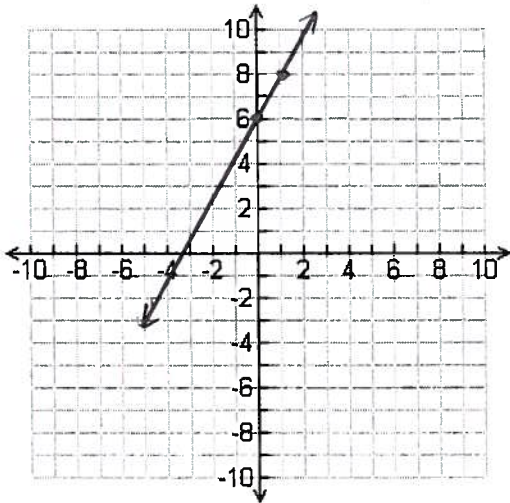
a)



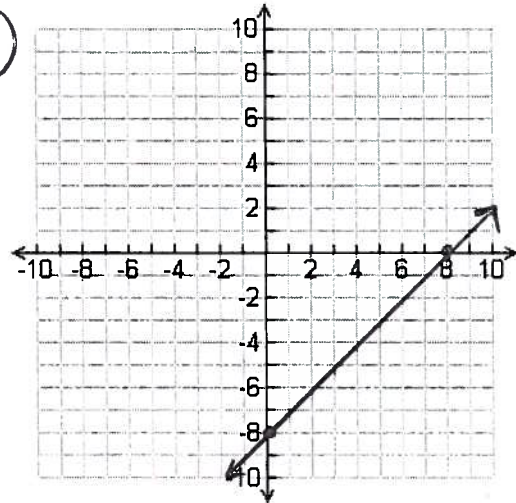
b)



c)



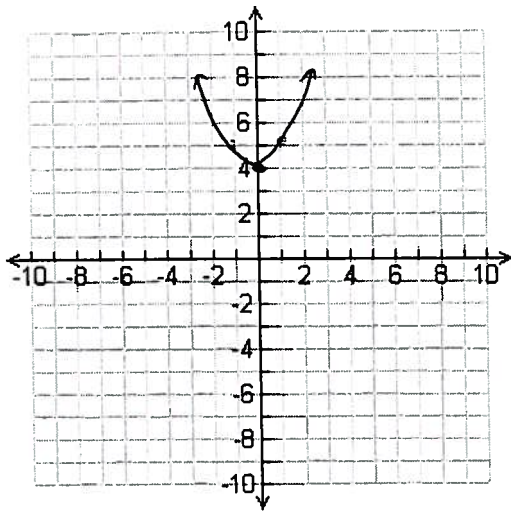
d)



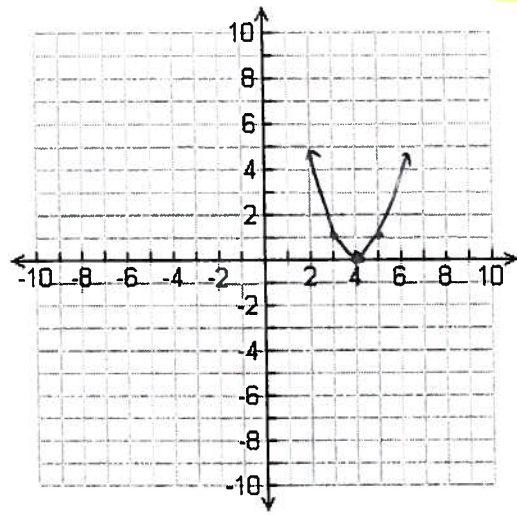
32) graph $y = x^2 - 4$



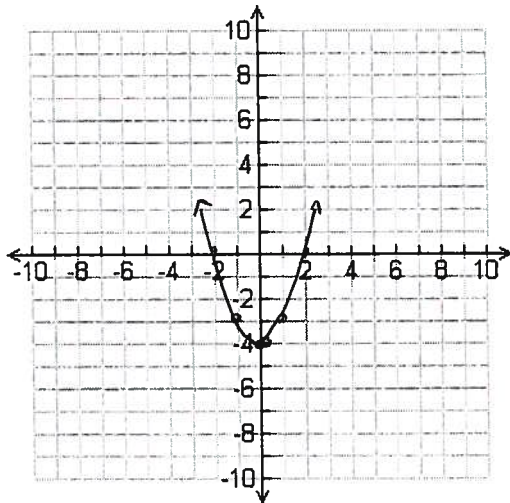
a



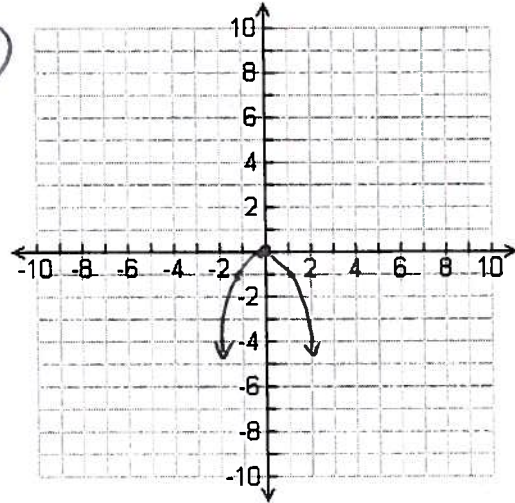
b



c



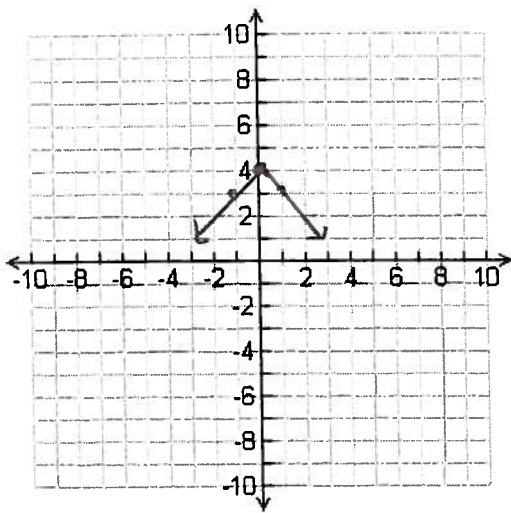
d



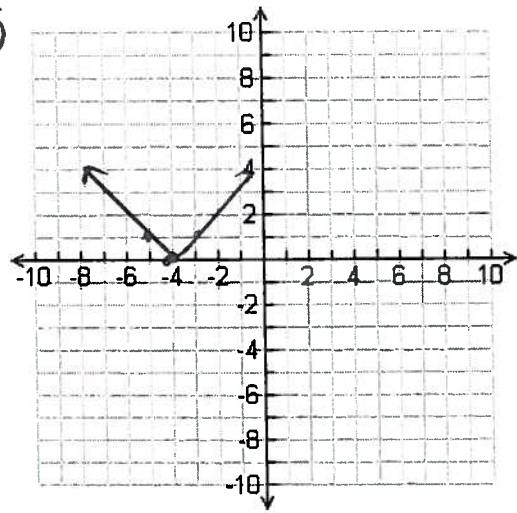
33) graph $y = |x-2| + 4$

6.

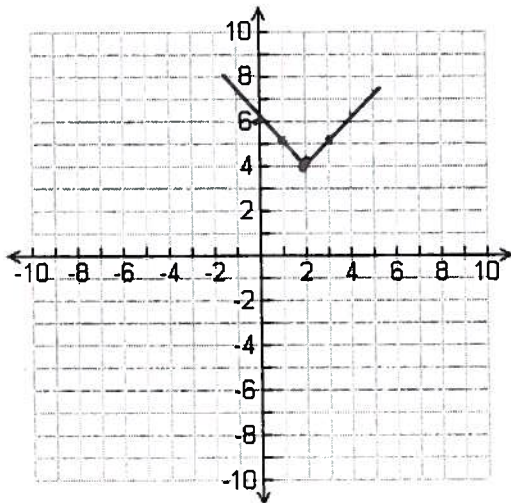
a



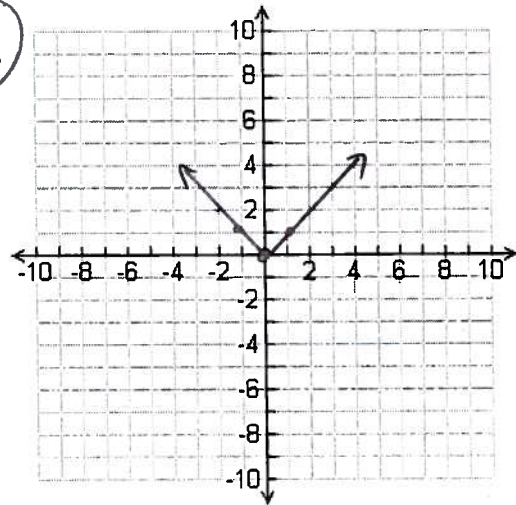
b



c



d



$$① \quad 14 = 8 + \frac{m}{2}$$

$$14 - 8 = \cancel{8} + \frac{m}{2} - \cancel{8}$$

$$6 = \frac{m}{2}$$

$$\frac{6}{1} = \frac{m}{2}$$

$$2(6) = 1(m) \quad \text{cross mult}$$

$$12 = m$$

$$② \quad \frac{7+x}{x} = 22$$

$$\frac{7+x}{x} = \frac{22}{1}$$

$$1(7+x) = 22(x)$$

$$7 + 1x = 22x$$

$$7 + \cancel{1x} - \cancel{1x} = 22x - 1x$$

$$7 = 21x$$

$$\frac{7}{21} = \frac{\cancel{21}x}{\cancel{21}}$$

$$\frac{7}{21} = x$$

$$\frac{7(1)}{7(3)} = x$$

$$\frac{1}{3} = x$$



③ Find a if $ax - 40 = x + 2$, $x = 2$

$$\begin{aligned} ax - 40 &= x + 2 \\ a(2) - 40 &= (2) + 2 \\ 2a - 40 &= 2 + 2 \\ 2a - 40 &= 4 \\ 2a - 40 + 40 &= 4 + 40 \\ 2a &= 44 \\ \frac{2a}{2} &= \frac{44}{2} \end{aligned}$$

$$a = 22$$

④ $6x + 20 = 2x$
 $6x + 20 - 20 = 2x - 20$

$$6x = 2x - 20$$

$$6x - 2x = 2x - 20 - 2x$$

$$4x = -20$$

$$\frac{4x}{4} = \frac{-20}{4}$$

$$x = -5$$

⑤ $\frac{2}{5x} + \frac{1}{x} = 21$

$$LCD = 5x$$

$$\frac{2}{5x}(5x) + \frac{1}{x}(5x) = 21(5x)$$

$$2(1) + 1(5) = 105x$$

$$2 + 5 = 105x$$

$$7 = 105x$$

$$\frac{7}{105} = \frac{105x}{105}$$

$$\frac{7(1)}{7(15)} = x$$

$$\frac{1}{15} = x$$

$$\begin{array}{r} 21 \\ \times 5 \\ \hline 105 \end{array}$$

$$\begin{array}{r} 15 \\ 7 \overline{) 105} \\ \underline{-(7)} \\ 35 \\ \underline{-(35)} \\ 0 \end{array}$$

Rem

⑥ Find P if $P = 2(L + w)$, $L = 10$, $w = 6$

$$P = 2(L + w)$$

$$P = 2(10 + 6)$$

$$P = 2(16)$$

$$P = 32$$

9

⑦ If $x = -5$ Evaluate $(x + 9)(x + 5)$

$$(x + 9)(x + 5) =$$

$$(-5 + 9)(-5 + 5) =$$

$$(4)(0) =$$

$$0 =$$

⑧ Find $f(-1)$ if $f(x) = \sqrt{x+1} + 2$

$$f(x) = \sqrt{x+1} + 2$$

$$f(-1) = \sqrt{-1+1} + 2$$

$$f(-1) = \sqrt{0} + 2$$

$$f(-1) = 0 + 2$$

$$f(-1) = 2$$

⑨ Find $Pr - r$ if $P = -11$, $r = \frac{1}{2}$

$$Pr - r =$$

$$(-11)\left(\frac{1}{2}\right) - \left(\frac{1}{2}\right) =$$

$$\left(-\frac{11}{1}\right)\left(\frac{1}{2}\right) - \left(\frac{1}{2}\right) =$$

$$-\frac{11}{2} - \frac{1}{2} =$$

$$\frac{-11-1}{2} =$$

$$\frac{-12}{2} =$$

$$-6 =$$

- (10) Find mean (average)
1000, 2000, 4000, 7000, 9000

$$4600 =$$

$$\begin{array}{r} 1000 \\ 2000 \\ 4000 \\ 7000 \\ + 9000 \\ \hline 23000 \end{array}$$

$$\begin{array}{r} 4600 \\ 5 \overline{) 23000} \\ \underline{-(20)} \\ 30 \\ \underline{-(30)} \\ 00 \\ \underline{-(00)} \\ 00 \end{array}$$

- (11) Evaluate $1000(1.05)^2$

$$1000(1.05)^2 =$$

$$1000(1.05)(1.05) =$$

$$1000(1.1025) =$$

$$1102.50 =$$

$$\begin{array}{r} 1.05 \\ \times 1.05 \\ \hline 525 \\ 1000 \\ \hline 1.1025 \end{array}$$

$$\begin{array}{r} 1.1025 \\ \times 1000 \\ \hline 1102.5000 \end{array}$$

- (12) Simplify $\frac{a^{10}}{a^3}$

$$a^{10-3} =$$

$$a^7 =$$

- (13) Simplify $-2a^3(ab^2 + b^2) =$

$$-2a^3(1a^1b^2 + 1b^2) =$$

$$-2a^{3+1}b^2 - 2a^3b^2 =$$

$$-2a^4b^2 - 2a^3b^2 =$$

- (14) Simplify $\left(\frac{4}{x}\right)^3$

$$\left(\frac{4}{x}\right)^3 =$$

$$\left(\frac{4}{x}\right)\left(\frac{4}{x}\right)\left(\frac{4}{x}\right) =$$

$$\frac{64}{x^3} =$$

(15) If $4x^2 - 16 = m$ then $x^2 - 4 =$

$$\frac{4x^2}{4} - \frac{16}{4} = \frac{m}{4}$$

$$x^2 - 4 = \frac{m}{4}$$

(16) simplify $\left(\frac{8k}{2}\right)^2$

$$\left(\frac{8k}{2}\right)^2 =$$

$$(4k)^2 =$$

$$(4k)(4k) =$$

$$16k^2 =$$

(17) simplify $p - 0.15p$

$$1.00p - 0.15p =$$

$$0.85p =$$

(18) $(3x + 2y)(3x - 2y) =$

$$9x^2 - 6xy + 6xy - 4y^2 =$$

$$9x^2 - 4y^2 =$$

(19) $(3x - 2y)(3x - 2y) =$

$$9x^2 - 6xy - 6xy + 4y^2 =$$

$$9x^2 - 12xy + 4y^2 =$$

(20) Factor

$$100x^2 - 9y^2 =$$

$$(10x)^2 - (3y)^2 =$$

$$(10x+3y)(10x-3y) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

12.

(21)

Factor

$$x^2 + 6x - 7 =$$

$$(x-1)(x+7) =$$

$$7 \cdot 1$$

(22)

Factor

$$x^2 - x - 2 =$$

$$(x+1)(x-2) =$$

$$2 \cdot 1$$

(23)

Factor

$$2x^2 + 5x - 3 =$$

$$(2x-1)(x+3) =$$

$$2 \cdot 1$$

$$3 \cdot 1$$

(24)

Factor

$$x^3 + 6x^2 + 8x =$$

$$x(x^2 + 6x + 8) =$$

$$x(x+2)(x+4) =$$

$$8 \cdot 1$$

$$2 \cdot 4$$

(25)

Factor GCF

$$3x^3 - 18x^2 + 3x =$$

$$3x(x^2 - 6x + 1) =$$

(26) Solve

$$x^2 - 6x - 7 = 0$$

(7.1)

$$(x+1)(x-7) = 0$$

$$\text{but } x+1=0 \quad \text{OR} \quad x-7=0$$

$$x+1-1=0-1 \quad \text{OR} \quad x-7+7=0+7$$

$$x = -1$$

$$\text{OR } x = 7$$

(27)

Solve

$$x^2 + x - 12 = 0$$

$$(x-3)(x+4) = 0$$

$$\text{but } x-3=0 \quad \text{OR} \quad x+4=0$$

$$x-3+3=0+3 \quad \text{OR} \quad x+4-4=0-4$$

$$x = 3$$

$$\text{OR } x = -4$$

12.1

2.6

3.4

(28)

Solve

$$\frac{x}{9} = \frac{1}{x}$$

$$x(x) = 9(1) \quad \text{Cross multiply}$$

$$x^2 = 9$$

$$\sqrt{x^2} = \pm \sqrt{9}$$

$$x = \pm 3$$

$$x = -3 \quad \text{OR} \quad x = 3$$

29. Solve

$$\sqrt{x-2} = 8$$

$$(\sqrt{x-2})^2 = (8)^2$$

$$x-2 = 64$$

$$x - \cancel{2} + \cancel{2} = 64 + 2$$

$$x = 66$$

141

30. Solve

$$\begin{array}{r} 2x + 3y = 5 \\ 4x - 2y = 2 \end{array}$$

$$\left(\begin{array}{r} 2x + 3y = 5 \\ 4x - 2y = 2 \end{array} \right) \left(\begin{array}{r} 2 \\ 3 \end{array} \right) \text{ mult}$$

$$\begin{array}{r} 4x + 6y = 10 \\ 12x - 6y = 6 \end{array}$$

$$\hline 16x = 16$$

$$\frac{16x}{16} = \frac{16}{16}$$

$$x = 1$$

Subst

$$2x + 3y = 5$$

$$2(1) + 3y = 5$$

$$2 + 3y = 5$$

$$\cancel{2} + 3y - \cancel{2} = 5 - 2$$

$$3y = 3$$

$$\frac{3y}{3} = \frac{3}{3}$$

$$y = 1$$

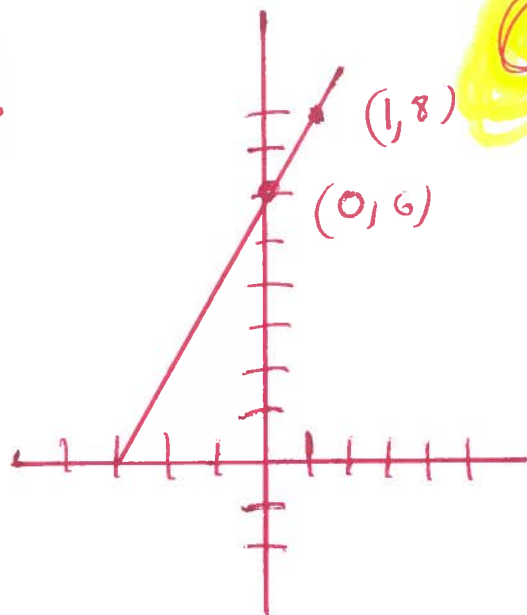
$$(x, y) = (1, 1)$$

(31) graph $y = 2x + 6$

$$\begin{aligned}y &= 2(0) + 6 \\y &= 0 + 6 \\y &= 6\end{aligned}$$

$$\begin{aligned}y &= 2(1) + 6 \\y &= 2 + 6 \\y &= 8\end{aligned}$$

x	y
0	6
1	8



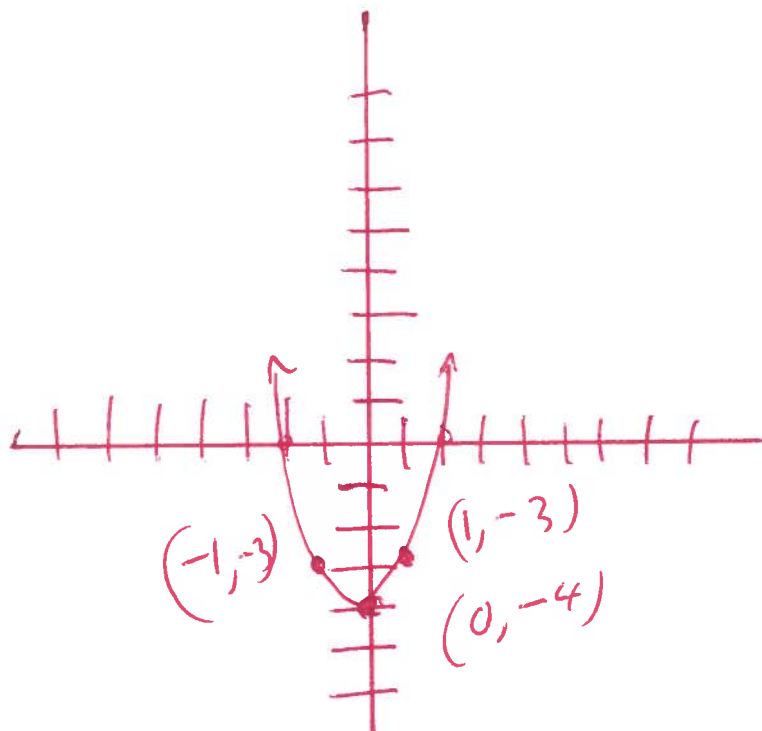
(32) graph $y = x^2 - 4$

$$\begin{aligned}y &= (-1)^2 - 4 \\y &= (-1)(-1) - 4 \\y &= 1 - 4 \\y &= -3\end{aligned}$$

$$\begin{aligned}y &= (0)^2 - 4 \\y &= (0)(0) - 4 \\y &= 0 - 4 \\y &= -4\end{aligned}$$

$$\begin{aligned}y &= (1)^2 - 4 \\y &= (1)(1) - 4 \\y &= 1 - 4 \\y &= -3\end{aligned}$$

x	y
-1	-3
0	-4
1	-3



33. graph $y = |x-2| + 4$

$$y = |1-2| + 4$$

$$y = |-1| + 4$$

$$y = 1 + 4$$

$$y = 5$$

$$y = |2-2| + 4$$

$$y = |0| + 4$$

$$y = 0 + 4$$

$$y = 4$$

$$y = |3-2| + 4$$

$$y = |1| + 4$$

$$y = 1 + 4$$

$$y = 5$$

x	y
1	5
2	4
3	5

