

Course End Review Answer Key

1. (a) $y = \frac{1}{2}x + 2$ (b) $y = \frac{4}{3}x - 5$
2. (a) x-int = 3 or (3, 0) (b) y-int = -9 or (0, -9)
(c) slope = 3
3. (5, 3)
4. (a) since: $m_1 \neq m_2 \therefore$ one solution
(b) since: $m_1 = m_2$ and $b_1 \neq b_2 \therefore$ no solution
(c) since: $m_1 = m_2$ and $b_1 = b_2 \therefore$ many solutions
(d) since: $m_1 \neq m_2 \therefore$ one solution
5. (a) $m_{//} = \frac{5}{4}$ (b) $m_{\perp} = -\frac{4}{5}$
6. (a) -5, -2, 1, 4 (b) 3, 3, 3
7. (a) (14, -5) (b) (6, -1)
(c) no solution (parallel lines) (d) $\left(\frac{38}{7}, \frac{4}{7}\right)$
8. Natalie: 26 yrs; Marixa: 22 yrs
9. 142 m by 161 m
10. $\sqrt{13}$ units
11. (a) $r = 5$ (b) $r = 2$
(c) $r = \sqrt{10}$ (d) $r = 9$
12. (-1, 2)
13. sides: $d_{DE} = d_{GF} = \sqrt{29}$ and slopes: $m_{DE} = m_{GF} = \frac{2}{5}$
 $d_{EF} = d_{DG} = \sqrt{41}$ $m_{EF} = m_{DG} = -\frac{5}{4}$

Since opposite sides are equal and opposite sides are parallel \therefore parallelogram

..... **OR**

$$\begin{array}{l} \text{sides: } d_{DE} = d_{GF} = \sqrt{29} \quad \text{and} \quad \text{diagonals: } d_{DF} = \sqrt{90} \\ d_{EF} = d_{DG} = \sqrt{41} \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad d_{EG} = \sqrt{50} \end{array}$$

Since opposite sides are equal and diagonals are different \therefore parallelogram

14. plug the answer into the original equation. If left side equal right side then the answer is correct.

15. (a) $m_{CA} = 2$ and $m_{AB} = -\frac{1}{2}$
 Since these adjacent sides are negative reciprocals thus right angle triangle

- 15 (b) $d_{AC} = d_{AB} = \sqrt{20}$
 Since two sides are equal thus isosceles triangle.

16. (a) (9.77, 0) and (-7.77, 0) (b) (0, 6.94) and (0, -10.94)
 (c) $r = 9$ (d) C(1, -2)

17. (a) $x = -3$ and $x = \frac{1}{2}$ (b) $x = 0$ and $x = 9$

- (c) $x = \frac{5}{2}$ and $x = -10$

18. (a) $3(b+5)(b+3)$ (b) $(3x+1)(x+2)$

- (c) $(m-11)(m+7)$ (d) $2(x+1)^2$

19. (a) $y = (5x-2)(5x+2)$ (b) $y = (m+4)^2$

- (c) $y = (h-9)(h-5)$ (d) $y = 2(x+5)(x-5)$

20. (a) (-7, -25) (b) (2, 1)

- (c) (-3, 98) (d) (-3, 0)

21. $\frac{3}{4}$ and -1

22. (a) $LS \neq RS$, does not lie on curve (b) $LS = RS$, does lie on curve

23. (a) (6, -33) (b) (-3, 33)

- (c) (-1, -12)

24. (a) $y = -7(x-3)^2 + 60$ (b) 60 at a maximum value

25. (a) $y = -3(x-2)^2 - 1$ (b) $y = 5(x+4)^2 + 3$

26. (a) $x = 2$ (b) $y = 2(x+1)(x-5)$

- (c) (2, -18) (d) $y = 2x^2 - 8x - 10$

27. (a)  h -intercept (alias y -intercept) is the height of the cliff

- (b) 35 m (let $t = 0$)

- (c) zeros: -1 and 3 cannot have negative time thus 3 sec

- (d) V(1, 40), thus 1 second to reach maximum height of 40 meters

- (e) 40 m

28. $x = 9.24$ and $x = 4.76$

29. (a) $x = \frac{-3 + \sqrt{65}}{4}$ and $x = \frac{-3 - \sqrt{65}}{4}$

- (b) $x = \frac{5 + \sqrt{13}}{6}$ and $x = \frac{5 - \sqrt{13}}{6}$

30. $x = -2$
31. (a) $y = (x + 9)(x + 3)$ (b) $(-9, 0)$ and $(-3, 0)$
 (c) $x = -6$ (d) $(-6, -9)$
32. (a) $y = -4x^2 + 10x + 7$ (b) $y = -3x^2 + 13x - 4$
33. reflection in the x -axis ; vertical compression of $\frac{2}{3}$; horizontal shift of 6 units left ;
 and vertical shift of 4 units up
34. $y = -\frac{1}{2}(x - 3)^2 - 11$
35. $y = -5(x - 5)(x + 2)$
36. $(2, -7)$
37. $y = 8(x + 5)^2 + 9$
38. $x = 2$
39. $\triangle ABC$ is $\frac{3}{2}$ larger than $\triangle DEF$... or ... $\triangle DEF$ is $\frac{2}{3}$ smaller than $\triangle ABC$
40. 10.7 m
41. (a) 4.6 (b) 39°
 (c) 45° (d) 13.4 m
 (e) 28° (f) 192.1 mm
42. (a) 0.9659 (b) 0.8829
 (c) 0.7431 (d) -1.0000
 (e) -0.8988 (f) -0.4040
43. (a) 81° (b) 23°
 (c) 57° (d) 134°
 (e) 46° (f) 39°
44. 47.5 m
45. (a) 14.9 m (b) 11.8 m
46. 71°
47. $\frac{2349}{2500}$
48. 19 cm
49. (a) 85° (b) 17.4 m
 (c) 17.9 m (d) 32°
50. 4.4 m
51. 285.5 m
52. 31.7°