

Unit 2 Review

P.57

1a. Solve $(x+2)^2=16$

$x+2=\pm 4$

$x=-4-2$ or $x=-4+2$

$x=-6$ or $x=-2$

P.56

~~1a. $3x^2-5x-7=0$~~

~~$3x^2+3x-7x-7=0$~~

~~$3x(x+1)-7(x+1)=0$~~

~~$(x+1)(3x-7)=0$~~

~~$x=-1, x=\frac{7}{3}$~~

~~$\begin{array}{r} 3 \cdot -7 \\ -21 \\ -7 \cdot +3 \\ -5 \end{array}$~~

P.56

2. Let $f(x)=x^2+3x-4$

a. y-int: $(0, -4)$

b. x^2+3x-4
 $(x+4)(x-1)$

x-int: $(-4, 0)$ and $(1, 0)$

c. $x = \frac{-b}{2a} = \frac{-3}{2(-4)} = \frac{3}{8} = -\frac{3}{2}$

d. ~~0~~ $-\frac{3}{2}$

3. $f(x)=a(x-p)(x-q)$

$(-5, 0), (1, 0), (0, 10)$

a. $p=5, q=-1$

b. $10 = a(0+5)(0-1)$

$10 = a(-5)$

$a = -2$

4. $f(x)=a(x+3)^2-6$

a. $(h, k) = (-3, -6)$

b. $f(1) = 2$ find a

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

$2 = a(4)^2 - 6$

$8 = a \cdot 16$

$a = \frac{1}{2}$

5. $x^2+2Kx+3=0$ 2 equal real

$b^2-4ac=0$

$(2K)^2-4(1)(3)=0$

$4K^2-12=0$

$4K^2=12$

$K^2=3$

$K = \pm\sqrt{3}$

$a=1$

$b=2K$

$c=3$

$$\#6. f(x) = 2x^2 + 12x + 5$$

$$a) f(x) = a(x-h)^2 + k$$

$$2x^2 + 12x + 5$$

$$2(x^2 + 6x + 9) + 5$$

$$2(x^2 + 6x + 9) + 5 \underline{-18}$$

$$f(x) = 2(x+3)^2 - 13$$

$$b) g(x) = 2(x+3-4)^2 - 13 + 8$$

$$g(x) = 2(x-1)^2 - 5$$

$$\text{vertex: } (1, -5)$$

$$7. \begin{array}{ccc} \text{x-int} & \text{point} & \text{x-int} \\ (-4, 0), & (2, -12), & (6, 0) \end{array}$$

$$f(x) = a(x+4)(x-6)$$

$$-12 = a(2+4)(2-6)$$

$$-12 = a(6)(-4)$$

$$-12 = a(-24)$$

$$a = \frac{1}{2}$$

$$f(x) = \frac{1}{2}(x+4)(x-6)$$

$$= \frac{1}{2}(x^2 - 2x - 24)$$

$$= \frac{1}{2}x^2 - x + 12$$

Q500 #12

p.57 #2

$$h(t) = 15t + 20 - 4.9t^2$$

a) initial height is 20m

b) max height (occurs at vertex)

$$t = \frac{-b}{2a} = \frac{-15}{2(-4.9)} = +1.53$$

plug into function:

$$h(+1.53) = 15(+1.53) + 20 - 4.9(+1.53)^2$$

$$h(+1.53) \approx 31.5 \text{ m}$$

c) how long is the ball's height $> 20\text{m}$?

at

$$-4.9t^2 + 15t + 20 = 20$$

$$-4.9t^2 + 15t = 0$$

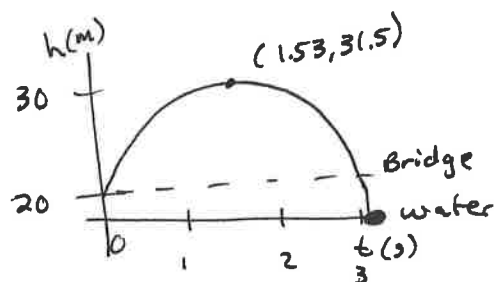
$$t(-4.9t + 15) = 0$$

$$t = 0 \text{ s and } -4.9t + 15 = 0$$

$$-4.9t = -15$$

$$t = 3.06 \text{ s}$$

$$\boxed{3.06 \text{ s}}$$



d)

$$-4.9t^2 + 15t + 20 = 0$$

$$t = \frac{-15 \pm \sqrt{(15)^2 - 4(-4.9)(20)}}{2(-4.9)}$$

$$t = \frac{-15 \pm 24.93}{-9.8}$$

$$t = -1.00 \text{ s}$$

not
reasonable

$$\text{or } \boxed{t = 4.08 \text{ s}}$$