

HW 67

1. $f(x) = a(x-1)(x-4)$

pt: (2, -4)

$$-4 = a(2-1)(2-4)$$

$$-4 = a(1)(-2)$$

$$-4 = -2a$$

$$2 = a$$

$$f(x) = 2(x-1)(x-4)$$

$$f(x) = 2(x^2 - 5x + 4)$$

$$f(x) = 2x^2 - 10x + 8$$

2. $f(x) = a(x+1)(x-5)$

pt: (1, 4)

$f(x)$

$$4 = a(1+1)(1-5)$$

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

$$4 = -8a$$

$$-1/2 = a$$

$$f(x) = -1/2(x+1)(x-5)$$

$$f(x) = -1/2(x^2 - 4x - 5)$$

$$f(x) = -1/2x^2 + 2x + 5/2$$

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

pt: (0, 8)

$$8 = a(0+3)^2 + 2$$

$$6 = 9a$$

$$2/3 = a$$

$$f(x) = 2/3(x+3)^2 + 2$$

$$f(x) = 2/3(x^2 + 6x + 9) + 2$$

$$f(x) = 2/3x^2 + 4x + 6 + 2$$

$$f(x) = 2/3x^2 + 4x + 8$$

4. $f(x) = a(x-4)^2 - 1$

pt: (2, -7)

$$-7 = a(2-4)^2 - 1$$

$$-6 = a(4)$$

$$-3/2 = a$$

$$f(x) = -3/2(x-4)^2 - 1$$

$$f(x) = -3/2(x^2 - 8x + 16) - 1$$

$$f(x) = -3/2x^2 + 12x - 24 - 1$$

$$f(x) = -3/2x^2 + 12x - 25$$

5. $f(x) = a(x+4)(x+2)$

pt: (-1, -9)

$$-9 = a(-1+4)(-1+2)$$

$$-9 = a(3)(1)$$

$$-3 = a$$

$$f(x) = -3(x+4)(x+2)$$

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

$$f(x) = -3(x^2 + 6x + 9) + 3$$

$$f(x) = -3x^2 - 18x - 27 + 3$$

$$f(x) = -3x^2 - 18x - 24$$

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

pt: (-2, 9)

$$9 = a(-2)(-2-4)$$

$$9 = a(12)$$

$$3/4 = a$$

$$f(x) = 3/4x(x-4)$$

$$f(x) = 3/4(x-2)^2 - 3$$

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

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

$$f(x) = 3/4x^2 - 3x$$

7. LOS: $x = 2 - 4$

$$f(x) = a(x+4)^2 + 2$$

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

$$-8 = a(4)$$

$$-2 = a$$

$$f(x) = -2(x+4)^2 + 2$$

$$f(x) = -2(x^2 + 8x + 16) + 2$$

$$f(x) = -2x^2 - 16x - 32 + 2$$

$$f(x) = -2x^2 - 16x - 30$$

8. LOS: $x = 1$

$$f(x) = a(x-1)^2 - 4$$

$$6 = a(3-1)^2 - 4$$

$$10 = a(4)$$

$$5/2 = a$$

$$f(x) = 5/2(x-1)^2 - 4$$

$$f(x) = 5/2(x^2 - 2x + 1) - 4$$

$$f(x) = 5/2x^2 - 5x + 5/2 - 4$$

$$f(x) = 5/2x^2 - 5x - 3/2$$