

$$(1) \quad y = a \log(-x+5) + k$$

$$(4,0) \quad 0 = a \log(-4+5) + k$$

$$0 = a \log 1 + k$$
$$a(0)$$

$$0 = k$$

$$(0,-2) \quad -2 = a \log 5$$

$$\frac{-2}{\log 5} = a$$

$$y = -\frac{2}{\log 5} \log(-x+5)$$

or

$$y = -2 \log_5(-x+5)$$

(2)

$$4x - 1 \leq -6$$

$$4x \leq -5$$

$$x \leq -\frac{5}{4}$$

$$4x - 1 \geq 6$$

$$4x \geq 7$$

$$x \geq \frac{7}{4}$$

$$\left(-\infty, -\frac{5}{4}\right] \cup \left[\frac{7}{4}, \infty\right)$$

(3)

$$y = \frac{3x^2}{(x+3)(x-3)}$$

$$(4) \quad F(0) = 9 \quad (0, 9)$$

8
degree 3

$x \rightarrow -\infty \quad y \rightarrow -\infty$
 $x \rightarrow \infty \quad y \rightarrow \infty$
b/c 3rd degree.

$$(5) \quad (x+6) \log 2 = x \log 7$$

$$\frac{x+6}{x} = \frac{\log 7}{\log 2}$$

$$\frac{x+6}{x} = 2.807$$

$$2.807x = x+6$$

$$1.8076x = 6$$

$$x = 3.32$$

$$(6) \quad \log_2(x+3) + \log_2 x = 1$$

$$\log_2 [x(x+3)] = 1$$

$$10^1 = x^2 + 3x$$

$$0 = x^2 + 3x - 10$$

$$(x+5)(x-2)$$

$$x = -5 \quad x = 2$$

Extraneous

$$x = 2$$

$$47700 = 3700 \left(1 + \frac{0.15}{4}\right)^{4t}$$

$$12.892 = 1.00375^{4t}$$

$$\log_{1.00375} 12.892 = 4t$$

$$683.039 = 4t$$

$$170.8 \text{ yrs}$$

$$(8) \quad 6(x + 6y) = (43)6$$

$$-6x + 5y = 70$$

$$6x + 36y = 258$$

$$41y = 328$$

$$y = 8$$

$$x + 6(8) = 43$$

$$x = -5$$

$$\boxed{(-5, 8)}$$

$$\text{CK } -6(-5) + 5(8) = 70$$

$$30 + 40 = 70 \checkmark$$

(9)

$$\frac{9x+8}{-3x+2} = \frac{17}{-1}$$

$$y+8 = -17(x+2)$$

$$\text{or } y-9 = -17(x+3)$$

(10)

$$y = a(x+1)^2(x-3)$$

$$-10 = a(1)(-3)$$

$$\frac{-10}{-3} = a$$

$$\boxed{y = \frac{10}{3}(x+1)^2(x-3)}$$