



Advanced Math

pg 227

1) c 2) g 3) h 4) F 5) a 6) e 7) d 8) b

14) left: decreasing
right: increasing

16) left: increasing
right: decreasing

18) left: increasing
right: increasing

20) left: decreasing
right: increasing

22) left: decreasing
right: decreasing

48) $F(x) = x^2 + 3x$

50) $F(x) = x^2 - x - 20$

52) $F(x) = x^3 - 7x^2 + 10x$

54) $F(x) = x^5 - 5x^3 + 4x$

56) $F(x) = x^3 - 10x^2 + 27x - 22$

62) x-ints: $\{9\}$
y-ints: $(0, 3)$

64) x-ints: $\{2, 8\}$
y-ints: $(0, -16)$

66) x-ints: $\{1, \frac{-1 \pm i\sqrt{3}}{2}\}$
y-ints: $(0, 1)$

68) x-ints: $\{0, 4\}$
y-int: $(0, 0)$

70) x-ints: $\{-1, 3\}$
y-int: $(0, -\frac{27}{10})$

72) x-ints: $\{-2, 0\}$
y-ints: $(0, 0)$

80) b) $(0, 6)$
c) ≈ 2.55 in

81) $\approx (200, 160)$

82) ≈ 15 years

83) a) 0 b) line from $(0, 0)$ to $(1, 0)$ will be up+down. c) 3 d) 0

pg 239

8) $5x + 3$

16) $x + \frac{-x-9}{x^2+1}$

10) $2x^2 - 4x + 3$

18) $x^2 + \frac{x^2+7}{x^2-1}$

12) $x + 4$

20) $2x + \frac{-17x+5}{x^2-2x+1}$

14) $4 - \frac{9}{2x+1}$



Advanced Math

pg 228

$$28) 0 = 49 - x^2$$

$$x^2 = 49$$

$$x = \pm 7$$

$$\{ \pm 7 \}$$

$$30) 0 = x^2 + 10x + 25$$

$$0 = (x + 5)^2$$

$$\{ -5 \}$$

$$32) (0 = \frac{1}{2}x^2 + \frac{5}{2}x - \frac{3}{2}) \cdot 2$$

$$0 = x^2 + 5x - 3$$

$$\frac{-5 \pm \sqrt{25 - 4(1)(-3)}}{2(1)} = \left\{ \frac{-5 \pm \sqrt{37}}{2} \right\}$$

$$34) 0 = 5(x^2 - 2x - 1)$$

$$0 = x^2 - 2x - 1$$

$$\frac{2 \pm \sqrt{4 - 4(1)(-1)}}{2(1)} = \frac{2 \pm 2\sqrt{2}}{2}$$

$$\{ 1 \pm \sqrt{2} \}$$

$$36) 0 = x^4 - x^3 - 20x^2$$

$$0 = x^2(x^2 - x - 20)$$

$$0 = x^2(x - 5)(x + 4)$$

$$\{ 0, 5, -4 \}$$

$$38) 0 = x^5 + x^3 - 6x$$

$$0 = x(x^4 + x^2 - 6)$$

$$0 = x(x^2 + 3)(x^2 - 2)$$

$$\{ 0, \pm i\sqrt{3}, \pm \sqrt{2} \}$$

$$40) 0 = t^5 - 6t^3 + 9t$$

$$0 = t(t^4 - 6t^2 + 9)$$

$$0 = t(t^2 - 3)^2$$

$$\{ 0, \pm \sqrt{3} \}$$

$$42) 0 = x^3 - 4x^2 - 25x + 100$$

$$0 = (x^3 - 4x^2) + (-25x + 100)$$

$$0 = x^2(x - 4) - 25(x - 4)$$

$$0 = (x^2 - 25)(x - 4)$$

$$\{ 4, \pm 5 \}$$