

$$\begin{array}{r} 28 \\ -14 \\ \hline -16 \end{array} - 2$$

$$\begin{aligned} 1) \quad 14x^3 &= 32x^2 - 8x \\ 14x^3 - 32x^2 + 8x &= 0 \\ 2x(7x^2 - 16x + 4) &= 0 \\ (7x^2 - 14x - 2x + 4) & \\ 7x(x-2) - 2(x-2) & \\ 2x(7x-2)(x-2) &= 0 \\ \boxed{x = 0, 2, 1, 2} \end{aligned}$$

$$2) \quad 4x^2 - 20x = 5$$

$$\begin{aligned} x^2 - 5x + \frac{25}{4} &= \frac{5}{4} + \frac{25}{4} \\ \sqrt{(x - 5/2)^2} &= \sqrt{30/4} \end{aligned}$$

$$x - 5/2 = \pm \frac{\sqrt{30}}{2}$$

$$\boxed{x = \frac{5 \pm \sqrt{30}}{2}}$$

$$3) \quad f(x) = 8x^2 - 16x - 40$$

$$8x^2 - 16x - 40 = 0$$

$$x = \frac{16 \pm \sqrt{256 - 4(8)(-40)}}{2(8)}$$

$$= \frac{16 \pm \sqrt{1536}}{16} \quad \left( \frac{256 \pm 16}{16} \right)$$

$$= \frac{16 \pm 16\sqrt{6}}{16} = \boxed{1 \pm \sqrt{6}}$$

$$\begin{aligned} 4) \quad 6x^2 - 600 &= 0 \\ 6(x^2 - 100) &= 0 \\ 6(x+10)(x-10) &= 0 \end{aligned}$$

$$\boxed{x = \pm 10}$$

$$5) \quad -8x^2 - 8x - 56 = 0$$

$$\begin{aligned} x^2 + x + 7 &= 0 \\ x^2 + x + \frac{1}{4} &= -7 + \frac{1}{4} \\ \sqrt{(x + 1/2)^2} &= \sqrt{-27/4} \\ x + 1/2 &= \pm \frac{3i\sqrt{3}}{2} \end{aligned}$$

$$\boxed{x = \frac{-1 \pm 3i\sqrt{3}}{2}}$$

$$\begin{aligned} 6) \quad 24x - 9 &= 16x^2 \\ 0 &= 16x^2 - 24x + 9 \\ 24 \pm \sqrt{576 - 4(16)(9)} & \\ & 2(16) \end{aligned}$$

$$\frac{24 \pm \sqrt{0}}{32} = \frac{24}{32} = \frac{3}{4}$$

$$\boxed{x = 3/4 \text{ mult. of } 2}$$

$$7) \quad x = 0 \text{ mult. of } 2 \text{ \& } 5 \text{ mult. of } 2$$

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

$$x^2(x^2 - 10x + 25) = 0$$

$$\boxed{x^4 - 10x^3 + 25x^2 = 0}$$

$$8) \quad x = -2/5 \text{ \& } 1/8$$

$$(5x+2)(8x-1) = 0$$

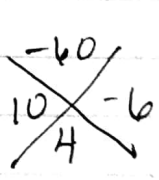
$$40x^2 - 5x + 16x - 2 = 0$$

$$\boxed{40x^2 + 11x - 2 = 0}$$

$$9) -16t^2 + 19t + 5 = 0$$

$$x = \frac{-19 \pm \sqrt{361 - 4(-16)(5)}}{2(-16)}$$

$$= \frac{-19 \pm \sqrt{681}}{-32} = \boxed{1.4 \text{ sec}}$$



$$10) 4x^2 + 4x - 15 = 0$$

$$(4x^2 + 10x - 6x - 15)$$

$$2x(2x + 5) - 3(2x + 5)$$

$$(2x - 3)(2x + 5) = 0$$

$$\boxed{x = 3/2, -5/2}$$

$$11) 5x^4 - 10x^2 + 5 = 0$$

$$5(x^4 - 2x^2 + 1) = 0$$

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

$$5(x+1)(x-1)(x+1)(x-1) = 0$$

$$\boxed{x = 1 \text{ mult. of } 2, -1 \text{ mult. of } 2}$$

$$12) 2x^2 + 6x - 2 = 0$$

$$2(x^2 + 3x - 1) = 0$$

$$x = \frac{-3 \pm \sqrt{9 - 4(1)(-1)}}{2(1)}$$

$$= \boxed{\frac{-3 \pm \sqrt{13}}{2}}$$

$$13) \begin{array}{|l} \boxed{\phantom{w}} \\ \hline w + 6 \end{array} \quad \begin{array}{l} w \\ w(w+6) = 27 \\ w^2 + 6w - 27 = 0 \\ (w+9)(w-3) = 0 \\ w = -9, 3 \end{array}$$

$$\boxed{w = 3 \text{ ft}} \\ \boxed{l = 9 \text{ ft}}$$