

Section 2.2

#6) Solve

$$7x + 2 = 3x - 9$$

Soln: Subtract $3x$ from both sides to get

$$4x + 2 = -9$$

Subtract 2 from both sides to get

$$4x = -11$$

Divide both sides by 4 to get

$$x = -\frac{11}{4}$$

#9) Solve

$$12 - 5(x + 3) = 2x - 5$$

Soln: Use distributive property to get

$$12 - 5x - 15 = 2x - 5$$

Simplify left side to get

$$-3 - 5x = 2x - 5$$

Add $5x$ to both sides to get

$$-3 = 7x - 5$$

Add 5 to both sides to get

$$2 = 7x$$

Divide both sides by 7 to get

$$x = \frac{2}{7}$$

#14) Solve

$$\frac{2x}{3} - \frac{3}{4} = \frac{x}{6} + \frac{21}{4}$$

Solu: Add $\frac{3}{4}$ to get

$$\frac{2x}{3} = \frac{x}{6} + \frac{24}{4}$$

Subtract $\frac{x}{6}$ to get

$$\frac{2x}{3} - \frac{x}{6} = \frac{24}{4} = 6$$

need common denominator: $\frac{2x}{3} = \frac{4x}{6}$

So we have

$$\frac{4x}{6} - \frac{x}{6} = 6$$

Simplify left side to get

$$\frac{3x}{6} = 6$$

Multiply by 6 to get

$$3x = 36$$

Divide by 3 to get

$$\boxed{x = 12}$$

Section 2.5

#11 | Solve $3x^2 - 75 = 0$

Soln: Add 75 to get

$$3x^2 = 75$$

Divide by 3 to get

$$x^2 = 25$$

Take square root of equation (don't forget \pm)

$$x = \pm \sqrt{25} = \pm 5$$

#14 | Solve $2x^2 + 14x = 36$

Soln: Subtract 36 to get

$$2x^2 + 14x - 36 = 0$$

Divide by 2 to get

$$x^2 + 7x - 18 = 0$$

} technically optional, but it makes the following step easier

Use quadratic formula with $a=1, b=7, c=-18$ to get

$$x = \frac{-7 \pm \sqrt{7^2 - 4(1)(-18)}}{2(1)} = \frac{-7 \pm \sqrt{49 + 72}}{2}$$

$$= \frac{-7 \pm \sqrt{121}}{2}$$

$$= \frac{-7 \pm 11}{2}$$

$$\begin{array}{l} \swarrow \oplus \\ = \frac{-7 + 11}{2} \\ = \frac{4}{2} \\ = 2 \end{array} \quad \begin{array}{l} \searrow \ominus \\ = \frac{-7 - 11}{2} \\ = \frac{-18}{2} \\ = -9 \end{array}$$

#39] Solve $x^2 + x = 4$.

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Soln: Subtract 4 to get

$$x^2 + x - 4 = 0$$

Use quadratic formula with $a=1$, $b=1$, and $c=-4$ to get

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

$$= -\frac{1}{2} \pm \frac{\sqrt{1+16}}{2} = -\frac{1}{2} \pm \frac{\sqrt{17}}{2}$$

Section 3.1

#68] Given: $f(x) = 4 - 2x$

Compute:

$$f(-2) = 4 - 2(-2) = 4 + 4 = 8$$

$$f(-1) = 4 - 2(-1) = 4 + 2 = 6$$

$$f(0) = 4 - 2(0) = 4 - 0 = 4$$

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

$$f(2) = 4 - 2(2) = 4 - 4 = 0$$

#71] Given: $f(x) = 3 + \sqrt{x+3}$

Compute: $f(-2) = 3 + \sqrt{-2+3} = 3 + \sqrt{1} = 3 + 1 = 4$

$$f(-1) = 3 + \sqrt{-1+3} = 3 + \sqrt{2}$$

$$f(0) = 3 + \sqrt{0+3} = 3 + \sqrt{3}$$

$$f(1) = 3 + \sqrt{1+3} = 3 + \sqrt{4} = 3 + 2 = 5$$

$$f(2) = 3 + \sqrt{2+3} = 3 + \sqrt{5}$$

perfect answers -
leave them as-is