Find all real solutions using square roots or cube roots.

1. $2x^2 - 85 = 13$

2. $17 + 4x^3 = 49$

3. $35 + 3x^2 = 23$

4. $11 - 2x^3 = 65$

Factor completely. Start with GCF.

5. $3x^3 - 75x$

6. $2x^3 + 18x$

Find all real solutions using square roots or cube roots.

1. $2x^2 - 85 = 13$
$$+85 \quad +85$$
$$\frac{2x^2}{2} = \frac{98}{2}$$
$$\sqrt{x^2} = \sqrt{49}$$
$$\boxed{x = \pm 7}$$

2. $17 + 4x^3 = 49$
$$-17 \qquad -17$$
$$\frac{4x^3}{4} = \frac{32}{4}$$
$$\sqrt[3]{x^3} = \sqrt[3]{8}$$
$$\boxed{x = 2}$$

3. $35 + 3x^2 = 23$
$$-35 \qquad -35$$
$$\frac{3 \cdot x^2}{3} = \frac{-12}{3}$$
$$\sqrt{x^2} = \sqrt{-4}$$
$$\boxed{\text{No Real Solutions}}$$

4. $11 - 2x^3 = 65$
$$-11 \qquad -11$$
$$\frac{-2x^3}{-2} = \frac{54}{-2}$$
$$\sqrt[3]{x^3} = \sqrt[3]{-27}$$
$$\boxed{x = -3}$$

Factor completely. Start with GCF.

5. $3x^3 - 75x$
$$= 3x(x^2 - 25)$$
$$= \boxed{3x(x+5)(x-5)}$$
$$\text{or}$$
$$\boxed{3x(x \pm 5)}$$

6. $2x^3 + 18x$
$$= \boxed{2x(x^2 + 9)}$$

$x^2 + 9$ is NOT FACTORABLE ANY FURTHER