1. Solve: \(\ln(3x + 2) = 2 \ln(6)\)

2. Find the vertex of the parabola \(f(x) = 5x^2 - 10x + 20\).

3. The ExPel Widget sells for $16 each and the monthly cost in dollars of producing \(x\) number of widgets is given by \(C(x) = 53040 + 10x\). How many Widgets must be sold in a month to break even?

4. What is the \(x\)-intercept of the line joining the points \((2, -1)\) and \((3, 7)\)?

5. A rectangular dog pen is twice as long as it is wide, and its perimeter is 90 feet. Find the area of the pen.

6. Find an equation for a circle with center at the point \((-1, 2)\) if the point \((2, -2)\) belongs to the circle.

7. Solve the inequality \(\frac{3x - 5}{x - 5} < 2\).

8. Solve: \(|3x + 7| = 9\)

9. Find all \(x\) that satisfy \(x^3 - 3x^2 - x = -3\).

10. Simplify: \(x^3 + 3x^2 - (2x + 5)(x - 7)\)