Directions: State whether each is True or False. If false, then explain why.

1. \( \frac{1}{0} = 0 \)

   1. False

2. \((x + 3)^2 = x^2 + 3^2\)

   2. False

3. \(\sqrt{x^2 + 4} = x + 2\)

   3. False

Directions: Answer the following. Simplify.

4. \(x^2 \cdot x^3\)

   4. \(x^5\)

5. \((x^2)^3\)

   5. \(x^6\)

6. Factor: \(x^2 + x - 6\)

   6. \((x - 2)(x + 3)\)

7. Consider \(h(x) = (2x - 3)^4\). Find two functions \(f(x)\) and \(g(x)\) such that \(h(x) = (f \circ g)(x)\).

   7. \(f(x) = x^4, g(x) = 2x - 3\)
8. Graph the following.

(a) \( y = \frac{1}{x} \)  

(b) \( y = \frac{1}{x^2} \)  

(c) \( y = e^x \)  

(d) \( y = \ln(x) \)  

(e) \( y = \sin(x) \)
9. Consider $f(x) = 2x^2 - 3x + 1$. Find the difference quotient $\frac{f(x+h)-f(x)}{h}$ and simplify.

9. $4x + h - 3$
10. Simplify $\cot (\pi) =$

10. **Undefined**

11. Simplify $\sec \left( \frac{7\pi}{6} \right) =$

11. $- \frac{2\sqrt{3}}{3}$