1. Determine whether the function is differentiable, continuous, both, or neither at the value where the rule for the function changes.

$$f(x) = \begin{cases} x^2 + 13x - 5, & x \geq 3 \\ 17x - 9, & x < 3 \end{cases}$$

- ○ The function is not continuous and not differentiable.
- ○ The function is continuous only.
- ○ The function is continuous and differentiable.
- ○ The function is differentiable only.

2. Find the derivative of

$$y = \ln(-4x^3 - 7x^2)$$

3. Given $f(x) = 3\tan^3(x)$, find $f'(x)$.

4. For the function $f(x) = -4x^2 + 6x - 10$, find the equation of the tangent line at $x = -12$.

5. Given the graph of the function f below, determine all intervals on the open interval $(-9, 9)$ where $f'(x) < 0$.