Practice worksheet | Differentiation and applications

Second derivatives and concavity

Name: _____ Date: _____

6 questions | 15 marks

1. Find $f''(x)$ for $f(x) = x^5 - 2x^3 + x$. [2 marks]

2. State the concavity of $y = -2x^2 + 3x + 4$. [2 marks]

3. For $f(x) = x^4 - 4x^2$, find the intervals of concavity. [3 marks]

4. Give an example of a function that decreases and is concave up for $x > 0$. [3 marks]

5. A population model is $P(t) = 100e^{0.2t}$. Find $P''(0)$. [2 marks]

6. If $f''(x) > 0$, does it follow that $f'(x) > 0$? Explain. [3 marks]