Practice worksheet | Rates of change and differential equations

Direct integration

Name: _____ Date: _____

6 questions | 12 marks

1. Solve $y' = 5x^4 - 2$ with $y(1) = 3$. [2 marks]

2. Solve $y' = 6e^{2x}$ with $y(0) = 7$. [2 marks]

3. Solve $y' = 2/x$ with $y(1) = 4$, $x > 0$. [2 marks]

4. A tank initially contains 20 L. The net inflow is $3t + 2$ L/min for $0 \leq t \leq 4$. Find its amount at 4 min. [2 marks]

5. A particle has $a = 4$, $v(0) = -3$, $s(0) = 2$. Find $s(t)$. [2 marks]

6. A particle has $v(t) = t - 2$ m/s on $0 \leq t \leq 4$. Find displacement and total distance. [2 marks]