MATH1040 Basic Mathematics **Practice Problems 10**

1. Answer each of the following questions, showing all working:

(**1**) Find $\frac{dy}{dx}$, if $y = \left(9x^8 + 2\right)^2$.

(**2**) If $y = \frac{6 - 9x}{9 - 8x}$, find y'.

(**3**) Let $y = \left(-2z^3 + 7\right)(-9 - 9z)$. Find y' using the product rule.

(**4**) If $y = \frac{4t^2 + 9}{-9t^2 + 5t}$, find y'.

(**5**) If $y = \frac{-5z - 4z^2 + 2}{-1 - 5z}$, find y'.

2. Answer each of the following questions, showing all working:

(**1**) Find $\frac{dy}{dx}$, if $y = \left(3x^{-8} + 6\right)^2$.

(**2**) If $y = \frac{6z - 6}{-9z - 6}$, find y'.

(**3**) Let $y = \left(-5 - 6t^3\right)(-6 + t)$. Find y' using the product rule.

(**4**) If $y = \frac{-10z^2 + z}{7z^2 + 6z}$, find y'.

(**5**) If $y = \frac{-4z^2 - 9z - 3}{-7z^2 + 5z + 3}$, find y'.

3. Answer each of the following questions, showing all working:

(**1**) Find $\frac{dy}{dx}$, if $y = \left(-7 - 9x^4\right)^2$.

(**2**) If $y = \frac{-2x}{-5x + 1}$, find y'.

(**3**) Let $y = (-5 - 3h)\left(-h + h^3\right)$. Find y' using the product rule.

(**4**) If $y = \frac{7x^2 + 5x}{7x^2 + 2}$, find y'.

(**5**) If $y = \frac{-1 + 8r - 7r^2}{-9r^2 - 6r}$, find y'.

4. Answer each of the following questions, showing all working:

(**1**) Find $\frac{dy}{dx}$, if $y = \frac{1}{\left(9 - x^{-3}\right)^3}$.

(**2**) If $y = \frac{3t + 5}{8 - t}$, find y'.

(**3**) Let $y = \left(4h^2 - 1\right)\left(4h^3 - 2h^2\right)$. Find y' using the product rule.

(**4**) If $y = \dfrac{7h^2 + 3}{4h^2 + 5}$, find y'.

(**5**) If $y = \dfrac{-3 + 2r}{r + 6r^2 - 4}$, find y'.

5. Answer each of the following questions, showing all working:

(**1**) Find $\dfrac{dy}{dx}$, if $y = \left(-4x^6 - 3\right)^5$.

(**2**) If $y = \dfrac{3 - 2r}{7 + 9r}$, find y'.

(**3**) Let $y = \left(-2r + 10r^3\right)\left(-3r^2 + 4\right)$. Find y' using the product rule.

(**4**) If $y = \dfrac{-6t^2 + 5t}{-t^2 + 4}$, find y'.

(**5**) If $y = \dfrac{7t + 7t^2 + 1}{-8t + 6t^2 - 3}$, find y'.