

NAME: \_\_\_\_\_ Score \_\_\_\_\_/10

Please **print** your name**SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION**

1. What is the area of a trapezoid with height 5 and bases 6 and 4? **25**.

$$\text{Use } A = \frac{1}{2}(b+B)h \text{ to obtain } A = \frac{1}{2}(4+6)5 = 25$$

2. What is the rule for the function  $f \circ g$  if  $f(x) = \log(x)$  and  $g(x) = 3x + 9$ ?

$$f \circ g(x) = f(g(x)) = f(3x + 9) = \log(3x + 9)$$

3. Find two simpler functions  $f$  and  $g$  so that the function  $h$  whose rule is  $h(x) = (2x^5 + x^2 - 4)^5$  may be written as the composition  $f \circ g$  of the simpler functions.

$$\text{Let } g(x) = 2x^5 + x^2 - 4$$

$$\text{Let } f(x) = x^5$$

$$\text{Then } f \circ g(x) = f(g(x)) = f(2x^5 + x^2 - 4) = (2x^5 + x^2 - 4)^5 = h(x)$$

$$\text{Therefore } f \circ g = h$$

4. Find two simpler functions  $f$  and  $g$  so that the function  $h$  whose rule is  $h(x) = \exp\left(\frac{x^3 - 8}{x^2 + 5}\right)$  may be written as the composition  $f \circ g$  of the simpler functions.

$$\text{Let } g(x) = \frac{x^3 - 8}{x^2 + 5}$$

$$\text{Let } f(x) = \exp(x)$$

$$\text{Then } f \circ g(x) = f(g(x)) = f\left(\frac{x^3 - 8}{x^2 + 5}\right) = \exp\left(\frac{x^3 - 8}{x^2 + 5}\right) = h(x)$$

$$\text{Therefore } f \circ g = h$$