

## **Part 1**

# **Math 1121 - Unit 8: Skill Review**

REVIEW1.tex

**Exercise 1** Solve the equation for the given variable.

$$2x - 4y = 8$$

$$y = \boxed{\frac{8 - 2x}{-4}} \quad x = \boxed{\frac{8 + 4y}{2}}$$

REVIEW2.tex

**Exercise 2** Solve the equation for the given variable.

$$\frac{3}{5}x + \frac{1}{2}y = \frac{3}{7}$$

$$y = \boxed{\frac{\frac{3}{7} - \frac{3}{5}x}{\frac{1}{2}}} \quad x = \boxed{\frac{\frac{3}{7} - \frac{1}{2}y}{\frac{3}{5}}}$$

REVIEW3.tex

**Exercise 3** Write the result of the operation on the function  $f(x)$ .

$$f(x) = x^2$$

$$2f(x) = \boxed{2x^2}$$

$$f(2x) = \boxed{4x^2}$$

$$f(x - 3) = \boxed{(x - 3)^2}$$

$$f(x) - 3 = \boxed{x^2 - 3}$$

$$2f(x) - 3 = \boxed{2x^2 - 3}$$

REVIEW4.tex

**Exercise 4** Solve the equation for the given variable.

$$-3a - 2b = 16$$

$$a = \boxed{\frac{16 + 2b}{-3}}$$

$$b = \boxed{\frac{16 + 3a}{-2}}$$

REVIEW5.tex

**Exercise 5** Solve the equation for the given variable.

$$\frac{4}{n} - \frac{3}{m} = 7$$

$$m = \frac{-3}{7 - \frac{4}{n}}$$

$$n = \frac{4}{7 + \frac{3}{m}}$$

REVIEW6.tex

**Exercise 6** Solve for  $x$ .

$$x^2 - 3x - 4 = 0$$

$$\text{Bigger value of } x = \boxed{4}$$

$$\text{Smaller value of } x = \boxed{-1}$$

REVIEW7.tex

**Exercise 7** Solve for  $x$ .

$$4x^2 - \frac{1}{9} = 0$$

$$\text{Bigger value of } x = \boxed{\frac{1}{6}}$$

$$\text{Smaller value of } x = \boxed{-\frac{1}{6}}$$

REVIEW8.tex

**Exercise 8** Solve for  $x$ .

$$2x^2 + 3x - 9 = 0$$

$$\text{Bigger value of } x = \boxed{\frac{3}{2}}$$

$$\text{Smaller value of } x = \boxed{-3}$$

REVIEW9.tex

**Exercise 9** Solve the following inequality.

$$-3x > 7$$

$$x \text{ (< />)} \boxed{-\frac{7}{3}}$$

REVIEW10.tex

**Exercise 10** Solve the following inequality.

$$2x + 4 < 2$$

$$x \text{ (< />)} \boxed{-1}$$

REVIEW11.tex

Consider the functions  $f(x)$  and  $g(x)$

$$f(x) = \sqrt{x-3}$$

$$g(x) = x^3$$

Answer the following questions about the functions  $f(x)$  and  $g(x)$ .

**Exercise 11** What are domain and range of  $f(x)$ ?

$$\text{Domain: } \boxed{3}, \boxed{\infty})$$

$$\text{Range: } \boxed{0}, \boxed{\infty})$$

**Exercise 11.1** What are domain and range of  $g(x)$ ?

$$\text{Domain: } \boxed{-\infty}, \boxed{\infty})$$

$$\text{Range: } \boxed{-\infty}, \boxed{\infty})$$

**Exercise 11.1.1** Find the following compositions of functions:

$$f(g(x)) = \boxed{\sqrt{x^3-3}}$$

$$g(f(x)) = \boxed{(\sqrt{x-3})^3}$$

$$f(f(x)) = \boxed{\sqrt{\sqrt{x-3}-3}}$$

$$g(g(x)) = \boxed{x^9}$$

**Exercise 11.1.1.1** What are domain and range of  $f(g(x))$ ?

$$\text{Domain: } \boxed{3^{\frac{1}{3}}}, \boxed{\infty})$$

$$\text{Range: } \boxed{0}, \boxed{\infty})$$

**Exercise 11.1.1.1.1** What are domain and range of  $g(f(x))$ ?

$$\text{Domain: } \boxed{3}, \boxed{\infty})$$

$$\text{Range: } \boxed{0}, \boxed{\infty})$$

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