

Math II Spiral Review 6 {Due Friday 3.25}

1. Which expression is equivalent to  $(8w^7x^{-5}y^3z^{-9})^{\frac{2}{3}}$ ?

A  $\frac{x^{\frac{10}{3}}z^6}{4w^{\frac{14}{3}}y^2}$

B  $\frac{4w^{\frac{14}{3}}y^2}{x^{\frac{10}{3}}z^6}$

C  $\frac{2w^{\frac{5}{3}}y^{\frac{1}{3}}}{x^{\frac{7}{3}}z^{\frac{11}{3}}}$

D  $\frac{x^{\frac{7}{3}}z^{\frac{11}{3}}}{2w^{\frac{5}{3}}y^{\frac{1}{3}}}$

2. A marathon is roughly 26.2 miles long. Which equation could be used to determine the time,  $t$ , it takes to run a marathon as a function of the average speed,  $s$ , of the runner where  $t$  is in hours and  $s$  is in miles per hour?

A  $t = 26.2 - 26.2s$

B  $t = 26.2 - \frac{s}{26.2}$

C  $t = 26.2s$

D  $t = \frac{26.2}{s}$

3. The time,  $t$ , in hours, that it takes  $x$  people to plant  $n$  trees varies directly with the number of trees, and inversely with the number of people. Suppose 6 people can plant 12 trees in 3 hours. How many people are needed to plant 28 trees in 5 hours and 15 minutes?

A 6

B 7

C 8

D 9

4. The force,  $F$ , acting on a charged object varies inversely to the square of its distance,  $r$ , from another charged object. When the two objects are 0.64 meter apart, the force acting on them is 8.2 Newtons. **Approximately** how much force would the object feel if it is at a distance of 0.77 meter from the other object?

A 1.7 Newtons

B 5.7 Newtons

C 11.9 Newtons

D 12.9 Newtons

5. Which function is even?

A  $f(x) = (x + 2)(x - 2)$

B  $f(x) = x(x + 2)$

C  $f(x) = (x + 1)(x - 2)$

D  $f(x) = (x - 1)(x - 1)$

6. A rectangular rug is placed on a rectangular floor. The width of the floor is 4 feet greater than the length,  $x$ , of the floor. The width of the rug is 2 feet less than the width of the floor. The length of the rug is 4 feet less than the width of the rug. Which function,  $R(x)$ , represents the area of the floor **not** covered by the rug?

- A  $R(x) = x^2 - x + 4$   
B  $R(x) = 2x^2 + 4x - 4$   
C  $R(x) = 12x - 4$   
D  $R(x) = 4x + 4$

7. Which expression is equivalent to  $(3x^5 + 17x^3 - 1) + (-2x^5 - 6)$ ?

- A  $x^5 + 17x^3 - 7$   
B  $x^5 - 11x^3 - 1$   
C  $5x^5 + 17x^3 + 7$   
D  $-6x^5 + 17x^3 + 6$

8.

The volume,  $V$ , of a certain gas varies inversely with the amount of pressure,  $P$ , placed on it. The volume of this gas is  $175 \text{ cm}^3$  when  $3.2 \text{ kg/cm}^2$  of pressure is placed on it. What amount of pressure must be placed on  $400 \text{ cm}^3$  of this gas?

- A  $1.31 \text{ kg/cm}^2$   
B  $1.40 \text{ kg/cm}^2$   
C  $2.86 \text{ kg/cm}^2$   
D  $7.31 \text{ kg/cm}^2$

9. The number of bacteria in a culture can be modeled by the function  $N(t) = 28t^2 - 30t + 160$ , where  $t$  is the temperature, in degrees Celsius, the culture is being kept. A scientist wants to have fewer than 200 bacteria in a culture in order to test a medicine effectively. What is the **approximate** domain of temperatures that will keep the number of bacteria under 200?

- A  $-1.01^\circ\text{C} < t < 2.03^\circ\text{C}$   
B  $-0.90^\circ\text{C} < t < 1.97^\circ\text{C}$   
C  $-0.86^\circ\text{C} < t < 1.93^\circ\text{C}$   
D  $-0.77^\circ\text{C} < t < 1.85^\circ\text{C}$

10. The graph of  $f(x) = x^2$  will be translated 5 units up and 2 units to the right. Which function describes the graph produced by the translation?

- A  $g(x) = x^2 - 4x + 9$   
B  $g(x) = x^2 + 4x - 1$   
C  $g(x) = x^2 - 10x + 27$   
D  $g(x) = x^2 + 10x + 23$