Lorie Hughes Math 1010 Chapter 11 Test

Read each question carefully then read each answer carefully to make sure you put the answer of your choice on the bubble sheet provided. I KNOW you can do this! Good Luck! Do not write on this test!

In problems 1 - 4 solve the equations. Express radicals in simplest form. (3pts each)

1) $m^2 = 75$

A) {15} B) $\{\pm 3\sqrt{5}\}$ C) $\{\pm 5\sqrt{3}\}$ D) $\{3\sqrt{5}\}$

2) $2n^2 - 56 = 0$

A) $\{7\sqrt{2}\}$ B) $\{4\sqrt{7}\}$ C) $\{\pm 4\sqrt{7}\}$ D) $\{\pm 2\sqrt{7}\}$

3) $(x - 7)^2 = 25$

A) {32} B) {12, 2} C) {2, -12} D) {5, -5}

4) $(x + 9)^2 = -40$

A) $\{-9 \pm 2i\sqrt{20}\}$ B) $\{-9 \pm 2i\sqrt{10}\}$ C) $\{-9 \pm 2\sqrt{10}\}$ D) $\{\pm 2i\sqrt{10}\}$

For problems 5 & 6, solve the equations by completing the square. (4pts each)

5) $x^2 + 8x - 28 = 0$

A) $\{\pm 2\sqrt{11}\}$ B) $\{-4 \pm 2\sqrt{22}\}$ C) $\{-4 \pm 2\sqrt{11}\}$ D) $\{2\sqrt{11} \pm 4\}$

6) $2x^2 + 10x + 7 = 0$

A) $\left\{\frac{-5 \pm \sqrt{11}}{4}\right\}$ B) $\left\{\frac{-5 \pm \sqrt{39}}{2}\right\}$ C) $\left\{\frac{-10 \pm \sqrt{11}}{2}\right\}$ D) $\left\{\frac{-5 \pm \sqrt{11}}{2}\right\}$

For problem #7, use the discriminant to determine whether the equation has two rational solutions, one rational solution, two irrational solutions, or two nonreal complex solutions. Do not actually solve! (3pts)

7) $v^2 + 7v + 1 = 0$

A) Two irrational solutions
B) Two rational solutions
C) One rational solution
D) Two nonreal complex solutions

Problems 8 & 9 use the quadratic formula to solve the equations. (4 pts each)

8) $2n^2 = -10n - 1$

A) $\left\{\frac{-5+\sqrt{23}}{2}, \frac{-5-\sqrt{23}}{2}\right\}$
B) $\left\{\frac{-5+\sqrt{3}}{2}, \frac{-5-\sqrt{3}}{2}\right\}$
C) $\left\{\frac{-5+\sqrt{23}}{4}, \frac{-5-\sqrt{23}}{4}\right\}$
D) $\left\{\frac{-10+\sqrt{23}}{2}, \frac{-10-\sqrt{23}}{2}\right\}$

9) $2x^2 = -5x - 7$

A) $\left\{\frac{-5+i\sqrt{31}}{4}, \frac{-5-i\sqrt{31}}{4}\right\}$
B) $\left\{\frac{5+\sqrt{31}}{4}, \frac{5-\sqrt{31}}{4}\right\}$
C) $\left\{\frac{5+i\sqrt{31}}{4}, \frac{5-i\sqrt{31}}{4}\right\}$
D) $\left\{\frac{-5+\sqrt{31}}{4}, \frac{-5-\sqrt{31}}{4}\right\}$

Problem 10: Solve the equation for the indicated variable. (Leave ± in your answer.) (3 pts)

10) $E = mc^2$ for c

A) $c = \pm\frac{\sqrt{Em}}{m}$
B) $c = \pm\sqrt{Em}$
C) $c = Em$
D) $c = \frac{E}{m}$

Use the Pythagorean theorem to solve the problems in 11 & 12. (5 pts each)

11) A lot is in the shape of a right triangle. The shorter leg measures 90 m. The hypotenuse is 30 m longer than the length of the longer leg. How long is the longer leg?

A) 90 m
B) 120 m
C) 150 m
D) 180 m

12) A ladder is resting against a wall. The top of the ladder touches the wall at a height of 6 ft. Find the length of the ladder if the length is 2 ft more than its distance from the wall.

A) 8 ft B) 6 ft C) 10 ft D) 12 ft

Use the area formula and the procedure discussed in class to solve the problem below. (5 pts)

13) Lorie has a fish pond 15 ft by 18 ft. She wants to put grass in a strip of uniform width around the pond. She has enough grass seed for 234 ft^2. How wide will the strip be?

A) 1.5 ft B) 9 ft C) 12 ft D) 3 ft

Use the Quadratic formula to solve the problem. Round your answer to the nearest tenth. (5 pts)

14) The position of an object moving in a straight line is given by $s(t) = 2t^2 - 3t$, where s is in meters and t is the time in seconds the object has been in motion. How long will it take the object to move 8 m?

A) 10.4 sec B) 2.7 sec C) 2.9 sec D) 9.0 sec

Identify the vertex of the given parabola. (3 pts)

15) $f(x) = -(x + 9)^2 - 6$

A) (-9, 6) B) (9, -6) C) (-9, -6) D) (9, 6)

For the quadratic function, tell whether the graph opens up or down and whether the graph is wider, narrower, or the same shape as the graph of $f(x) = x^2$. (3 pts)

16) $f(x) = -x^2 - 12$

A) Up; same B) Up; narrower C) Down; same D) Down; narrower