In Class Exercises Set A

Answers and Explanations: Math Geometry 2

1) The answer is **C)**. The radian measure of an angle is equal to the arc length over the radius, in this case, 1.6. (1)

2) The answer is **A)**. Using the distance formula, the distance between the x-coordinates must be $\sqrt{13^2 - 5^2} = 12$. The only two coordinates whose difference is 12 are -2 and 10. (1)

3) The answer is **C)**. Again use the distance formula to find the length of the radius, $\sqrt{8^2 + 15^2}$=17. Thus, the r^2 term must be $17^2 = 289$. (2)

4) The answer is **B)**. Using the formula for area of a circle, $A = \pi r^2$, the cost per square yard for Jefferson and Polk is $10/(\pi(5)$^2) and $20/(\pi(7.5)$^2), respectively. Polk is getting the better deal, as he is receiving a lower cost per area. (2)

5) The answer is **D)**. Word translation should let you know that for the point in question, x = $4y$. Substitute this value in for y in the original equation to find that y = 18 – $2(4y)$. Solve for y to find that $y = 2$. (Plug back into the original equation to check, finding that the point is $(8, 2)$. (2)

6) The answer is **17**. Complete the square and solve:

$$x^2 - 8x + y^2 + 22y + 133 = 0$$

$$(x^2 - 8x + 16) + (y^2 + 22y + 121) = -133 + 16 + 121$$

$$(x - 4)^2 + (y + 11)^2 = 4$$

$$h = 4, k = -11, r = 2$$

$$= h - k + r$$
$$= 4 - (-11) + 2$$
$$= 17$$

7) The answer is **15**. This problem has a lot of moving parts, but you have all the tools necessary to solve it. First, the equation for line l: the slope must be the opposite reciprocal of the slope of the line it is perpendicular to, or $4/3$. The equation can thus be written in point-slope form as y = $4/3(x - 3)$. Plugging in x = 0 gives that the y-intercept is $(0, -4)$. The distance formula then yields $\sqrt{9^2 + 12^2}$=15. (3)

8) The answer is **60**. This is a tough problem: it requires applying several concepts at once. First, remember that an inscribed angle is half of the central angle of an arc. The angles ADC and ABC both inscribe a diameter, which contains an arc of 180°. Thus, their measure must be $180/2 = 90$ degrees each. You can then apply the Pythagorean Theorem: $6^2 + 5^2 = AC^2 = 1^2 + AD^2$. AD^2 is thus equal to 60. (3)