Bellwork Alg 2B Monday, November 20, 2017

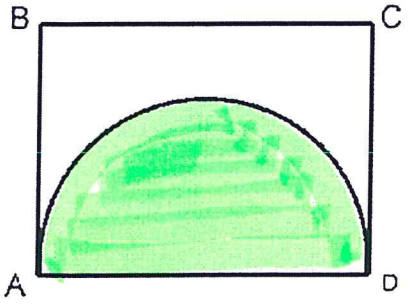
1. The lines $6x - 3y = 15$ and $y = x - 1$ intersect at the center of a circle. A y-intercept of the circle is -1. Write the equation of this circle.

2. If $x^2 - y^2 = 55$, and $x - y = 11$, then $y =$

A. 8 B. 5 C. 3 D. -8 E. -3

3. Rectangle ABCD has a perimeter of 26. The half circle with diameter AD has an area of 8π. What is the perimeter of the part of the figure that is not shaded?

A. $26 + 4\pi$ B. $18 + 8\pi$ C. $18 + 4\pi$ D. $14 + 4\pi$ E. $14 + 2\pi$



(figure not to scale)

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Answers

1. The lines $6x - 3y = 15$ and $y = x - 1$ intersect at the center of a circle. A y-intercept of the circle is -1. Write the equation of this circle.

$6x-3y=15$, $y=x-1$

$6x-3(x-1)=15$

$6x-3x+3=15$

$3x+3=15$

$-3 \quad -3$

$\frac{3x}{3}=\frac{12}{3}$

$x=4$

$y=x-1=4-1$

$y=3$

CENTER $(4,3)$

y-INT $=-1$ IS THE POINT $(0,-1)$

radius: distance from center to y-int

$r=\sqrt{(4-0)^2+(3-(-1))^2}=\sqrt{4^2+4^2}=\sqrt{16+16}=\sqrt{32}$ → $r^2=32$

$(x-4)^2+(y-3)^2=32$

2. If $x^2 - y^2 = 55$, and $x - y = 11$, then $y =$

A. 8 B. 5 C. 3 D. -8 E. -3

$x^2-y^2=55$

$(x+y)(x-y)=55$

$(x+y)(11)=55$

$\frac{}{11} \quad \frac{}{11}$

$x+y=5$

$x-y=11$

$+ \quad x+y=5$

$2x=16$

$x=8$ →

$x+y=5$

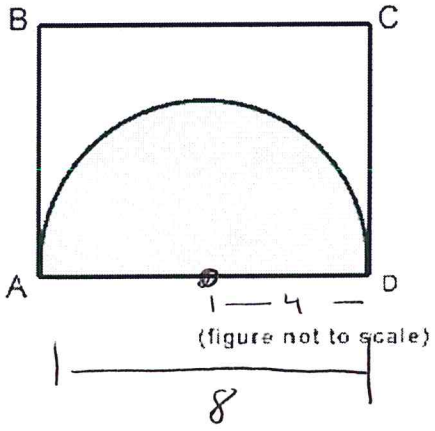
$8+y=5$

$-8 \quad -8$

$y=-3$

3. Rectangle ABCD has a perimeter of 26. The half circle with diameter AD has an area of 8π. What is the perimeter of the part of the figure that is not shaded?

A. $26+4\pi$ B. $18+8\pi$ C. $18+4\pi$ D. $14+4\pi$ E. $14+2\pi$



Area of half circle $= 8\pi$

Area of full circle $= 16\pi = \pi r^2$

$16 = r^2$

$r = 4$

$r=4$ circumference of full circle $= 2\pi(4) = 8\pi$

$\therefore$ perimeter of ½ circle $= 4\pi$

$AD = BC = 8$

perimeter $= 26$

$AD + BC + DC + AB = 26$

$8 + 8 + DC + AB = 26$

$DC + AB = 10$ → $DC = AB = 5$

perimeter of non-shaded part $5+8+5+4\pi = 18+4\pi$