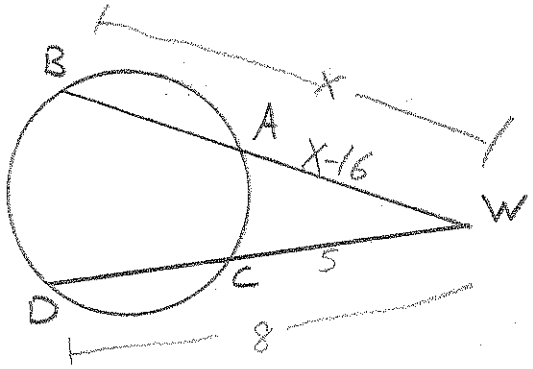
Review For Adv. Geometry Sec. 10.6 & 10.7

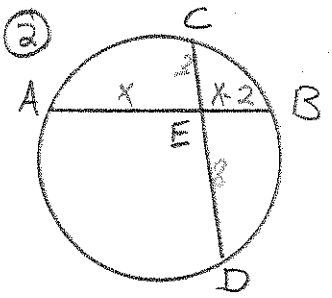
Key

① 

$WB = X$
$WA = X-16$
$WD = 8$
$WC = 5$
$X = ?$

$x(x-16) = 5(8)$
$x^2 - 16x - 40 = 0$
$x = \frac{16 \pm \sqrt{16^2 - 4(1)(-40)}}{2} = \frac{16 \pm 20.396}{2}$

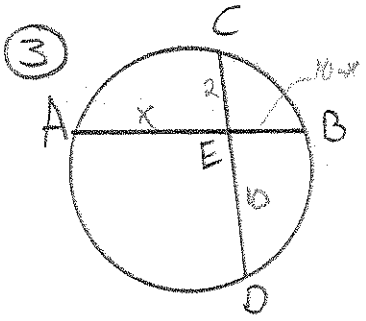
$\boxed{X = 18.198}$

② 

$AE = X$
$BE = X-2$
$CE = 3$
$DE = 8$
$AB = ?$

$x(x-2) = 3 \cdot 8$
$x^2 - 2x = 24$
$x^2 - 2x - 24 = 0$
$(x-6)(x+4) = 0$
$x = 6 \quad \cancel{x = -4}$

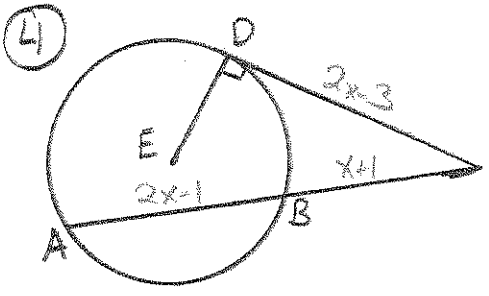
$AE = 6$
$BE = 4$
$\boxed{AB = 10}$

③ 

$AB = 10$
$CE = 2$
$CD = 12$
$AE = ?$

$2 \cdot 10 = x(10-x)$
$20 = 10x - x^2$
$x^2 - 10x + 20 = 0$
$x = \frac{10 \pm \sqrt{100 - 4(1)(20)}}{2} = \frac{10 \pm \sqrt{20}}{2}$

Let $AE = X$
$x = 7.2361$
$x = 2.7639$

④ 

$DC = 2x-3$
$BC = x+1$
$AB = 2x-1$
$x = ?$

$(2x-3)^2 = (x+1)(3x)$
$4x^2 - 12x + 9 = 3x^2 + 3x$
$x^2 - 15x + 9 = 0$
$x = \frac{15 \pm \sqrt{15^2 - 4(1)(9)}}{2} = \boxed{14.373}$ or $\cancel{0.626}$

⑤ Write an equation for the circle with the given center & radius.

a) Center $(4, -3)$ $r = \sqrt{7}$
$(x-4)^2 + (x+3)^2 = 7$

b) Center $(0, 6)$ $r = 2.5$
$x^2 + (y-6)^2 = 6.25$

(6) Find the center and radius of each circle.

a) $(x+6)^2 + y^2 = 10$

center $(-6, 0)$

$r = \sqrt{10}$

b) $(x+5)^2 + (y-2)^2 = 16$

center $(-5, 2)$

$r = 4$

(7) Find the x- and y- intercepts for the graph of each circle.

a) $x^2 + y^2 = 64$

x-interc

$x^2 + 0^2 = 64$

$x = \pm 8$

y-intercept

$0 + y^2 = 64$

$y = \pm 8$

b) $(x-2)^2 + y^2 = 25$

X-intw

$(x-2)^2 + 0^2 = 25$

$x - 2 = \pm 5$

$x = 7 \quad x = -3$

Yinter

$(0-2)^2 + y^2 = 25$

$4 + y^2 = 25$

$\sqrt{y^2} = \sqrt{21}$

$y = \pm\sqrt{21}$

(8) Write an equation for the circle with the given characteristics.

a) center $(2, 3)$ & tangent to the x-axis

$(x-2)^2 + (y-3)^2 = 9$

b) Center $(0, 1)$ & contains the pt $(4, 4)$

$x^2 + (y-1)^2 = 25$ distance

$r = 5$

c) has $(1, 3)$ and $(5, 5)$ as endpoints of a diameter.

$(x-3)^2 + (y-4)^2 = 25$