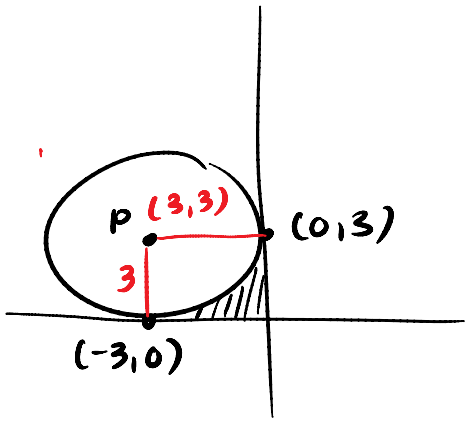
13.7 (2) Homework
pgs. 640 - 641 #13, 16, 20, 23, 25, 26

#13 ⊙P is tangent to the x axis and the y axis



a. Find an equation of the circle

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

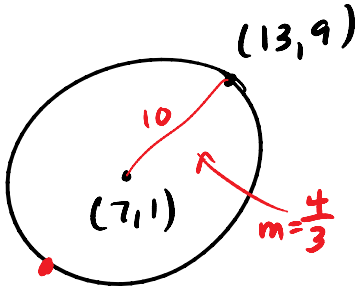
b. Find the area of the shaded region

$A_{\square} = 3 \cdot 3 = 9$

$A_{sec} = \frac{9\pi}{4}$

$A_{shad} = 9 - \frac{9\pi}{4} \approx \boxed{1.9}$

#16 The point (13,9) is on a circle centered at (7,1)



a. Write an equation of circle

$r = \sqrt{(6)^2+(8)^2} = \sqrt{100} = 10$

$\boxed{(x-7)^2+(y-1)^2=100}$

b Area $\boxed{100\pi}$

c. Circumference $\boxed{20\pi}$

d. Coordinates of points directly opposite (13,9) Use midpt $\boxed{(1,-7)}$

e. Write in point slope form, an equation of the line tangent to the circle (13,9)

$\perp m = -\frac{3}{4}$ $\boxed{y-9=-\frac{3}{4}(x-13)}$

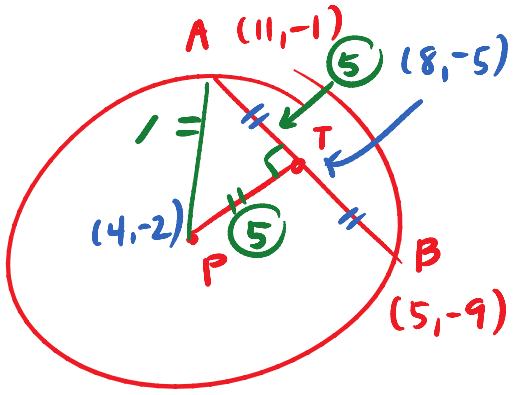
f. distance between (19,6) and center $\boxed{13}$

g distance between (19,6) and circle $13-10 = \boxed{3}$ radius

#20 Consider the circle represented by $(x-4)^2+(y+2)^2=50$

C: (4, -2)
r: $5\sqrt{2}$

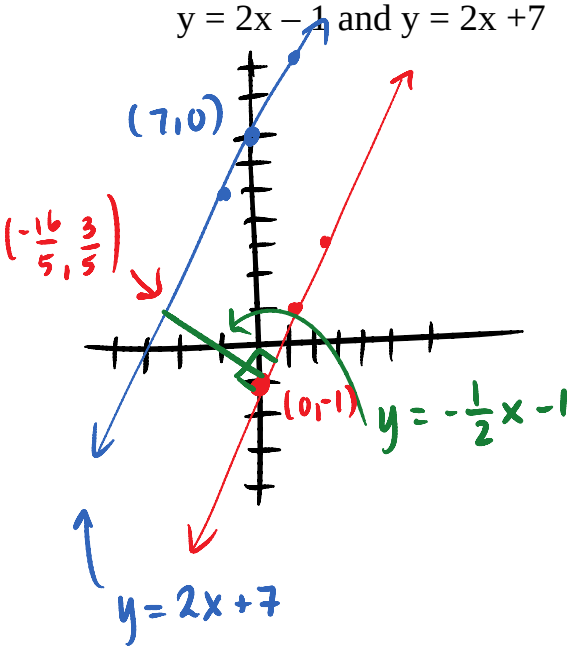
Let P be the center of the circle and T be a point on chord AB such that PT is perpendicular to AB. If A = (11,-1) and B = (5, -9) what is,



a. PT? $= \sqrt{(4)^2+(3)^2}$
$= \sqrt{25} = \boxed{5}$

b. m< TPA $\boxed{45°}$

#23 Find the distance between the lines represented by:
y = 2x – 1 and y = 2x +7



P.O.I.: $-\frac{1}{2}x-1=2x+7$

$-8=\frac{5}{2}x$

$x=-\frac{16}{5}$ $y=\frac{3}{5}$

$d=\sqrt{(0+\frac{16}{5})^2+(\frac{3}{5}+1)^2}$

$d=\sqrt{64/5}=\boxed{\frac{8\sqrt{5}}{5}}$

#25 Given the circles represented by: $(x+9)^2+(y-4)^2=52$

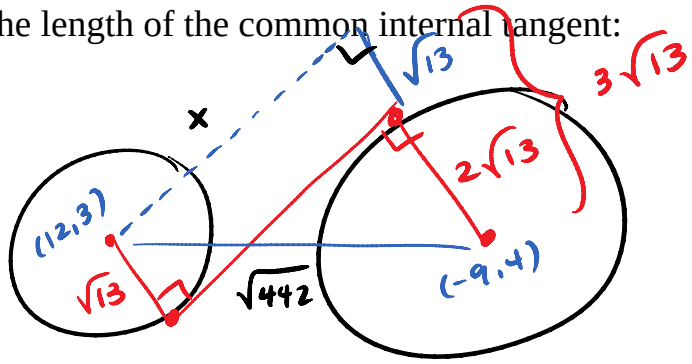
and

$(x-12)^2+(y-3)^2=13$

C: (-9, 4)
r: $2\sqrt{13}$

C: (12, 3)
r: $\sqrt{13}$

a. Find the length of the common internal tangent:



$d=\sqrt{(21)^2+(1)^2}$

$d=\sqrt{442}$

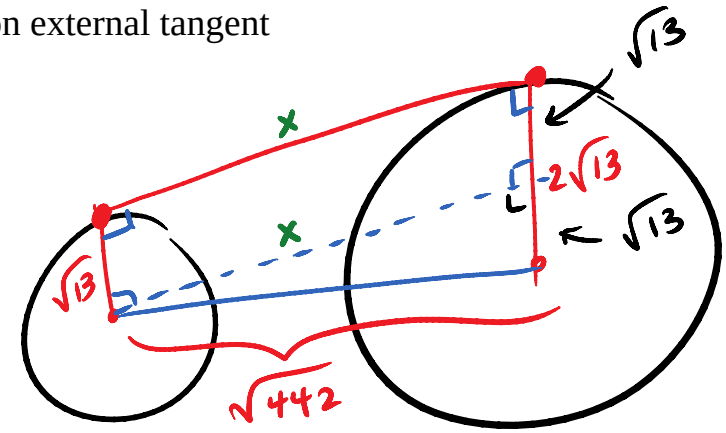
$x^2+(3\sqrt{13})^2=(\sqrt{442})^2$

$x^2+117=442$

$x^2=325$

$\boxed{x=5\sqrt{13}}$

a. Common external tangent



$x^2 + (\sqrt{13})^2 = (\sqrt{442})^2$

$x^2 + 13 = 442$

$x^2 = 429$

$x = \sqrt{429}$

#26

Find the area of the quadrilateral with vertices at (-3,2), (15,6), (7,12), and (-7,8)

-3	2
15	6
7	12
-7	8
-3	2

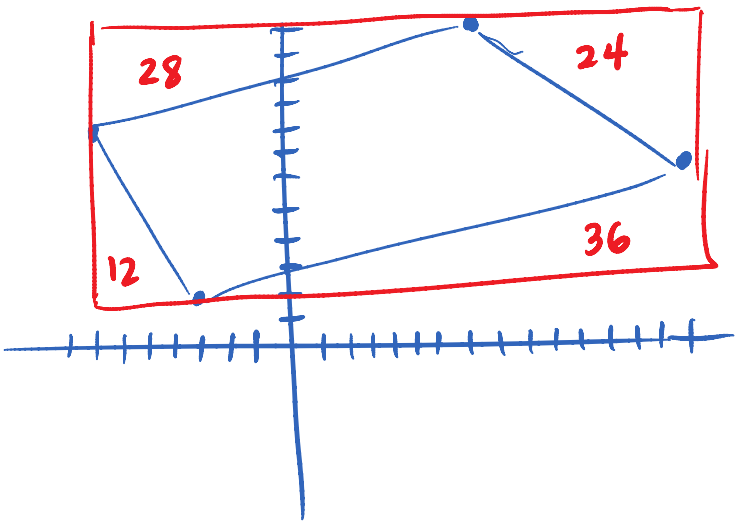
$A = \frac{1}{2}\left|(-18 + 180 + 56 + -14) - (30 + 42 + -84 + -24)\right|$

$= \frac{1}{2}\left|(204) - (-36)\right|$

$= \boxed{120}$

"Shoelace method"

OR



$A_{rect} = 220$

$A_{quad} = 220 - 12 - 36 - 24 - 28$

$\boxed{120}$