Pre-Calculus Homework #9 – Answer Key

1) $x = 4$

2) 26 years $8898.35

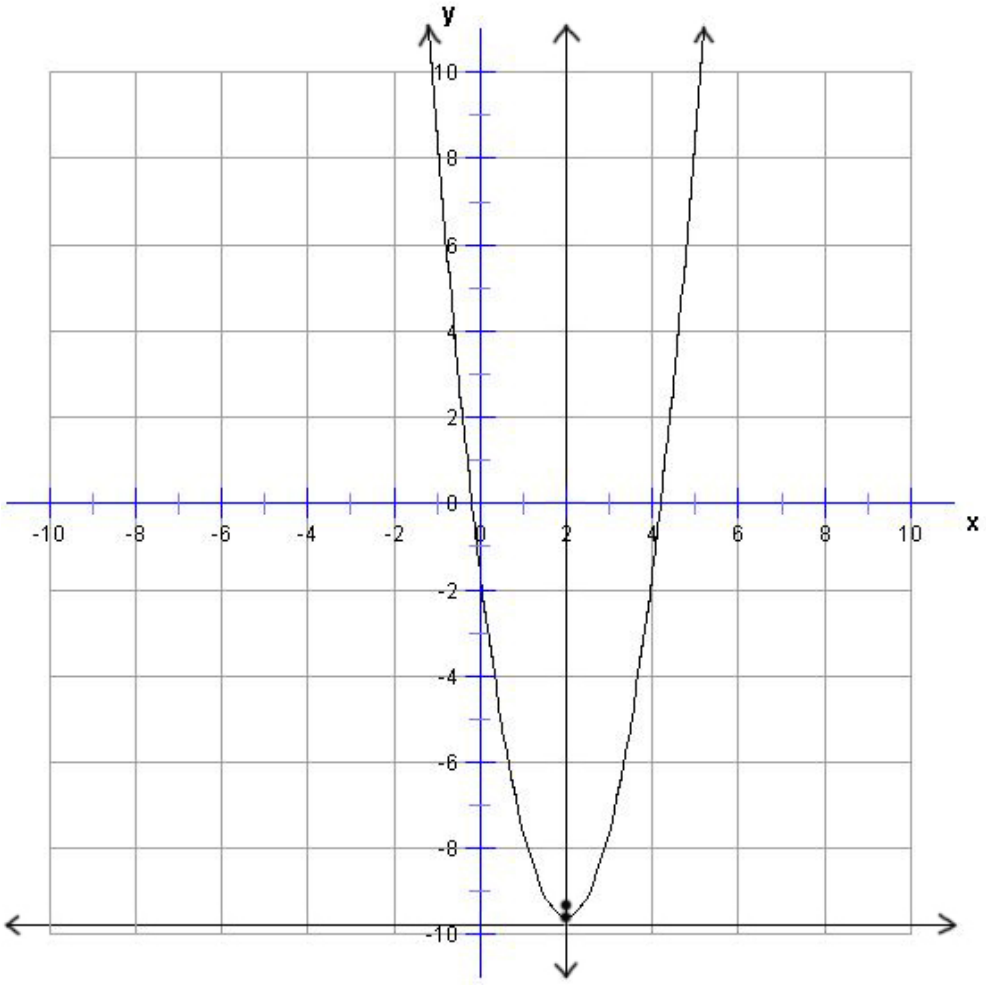
3) $x = \frac{e^3 - 11}{2}$ $x \approx 4.543$

4) $6.4\ \mu m$

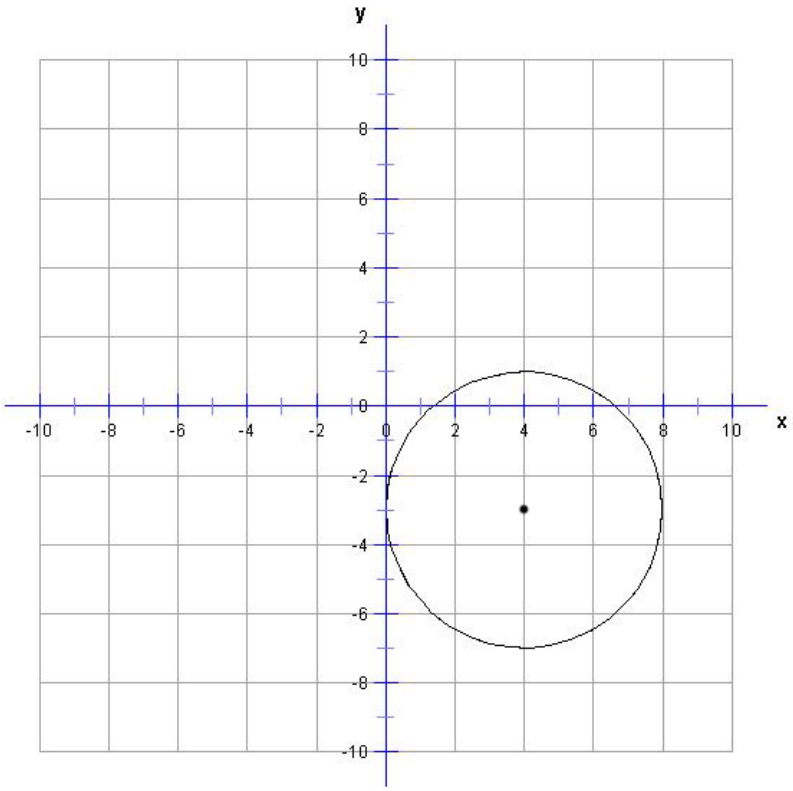
5) $x = \frac{7}{3}$

6) Parabola $y = 2(x-2)^2 - \frac{29}{3}$ Vertex = $(2, \frac{-29}{3})$ Focus = $(2, \frac{-229}{24})$

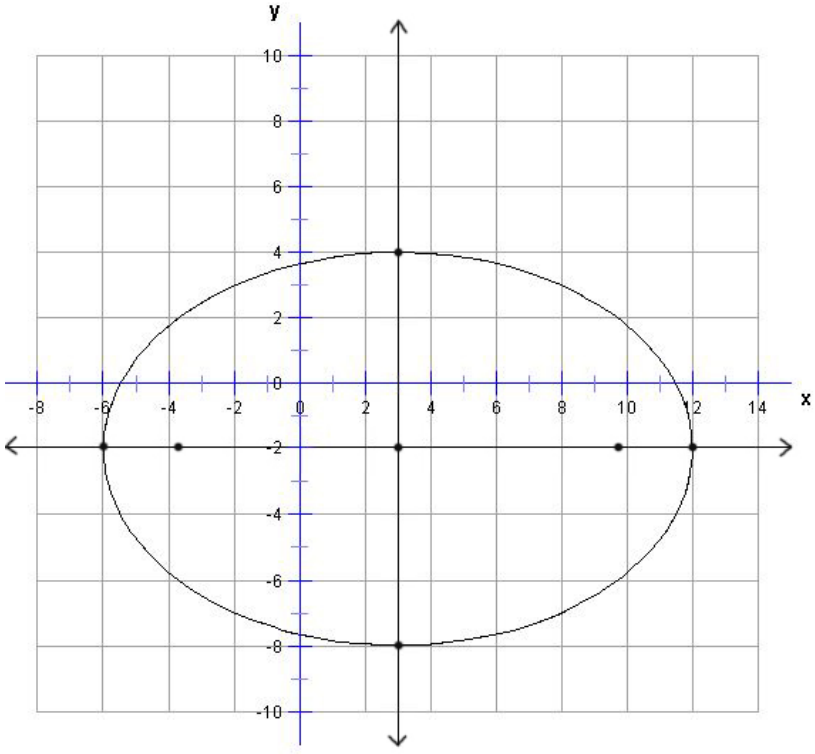
Directrix: $y = \frac{-235}{24}$ Axis of symmetry: $x = 2$



7) Circle $(x-4)^2+(y+3)^2=16$ Center = $(4,-3)$ Focus = $(4,-3)$
Radius = 4 Axes of symmetry: All lines going through the center

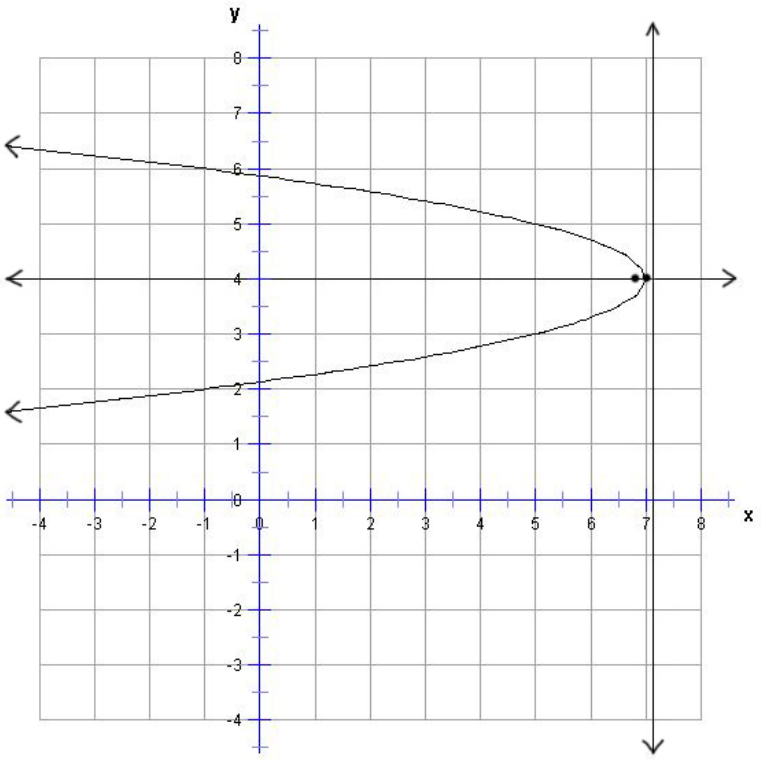


8) Ellipse $\frac{(x-3)^2}{81}+\frac{(y+2)^2}{36}=1$ Vertices = $(3,4),(3,-8),(-6,-2),(12,-2)$
Center = $(3,-2)$ Foci = $(3-3\sqrt{5},-2),(3+3\sqrt{5},-2)$ Major axis = 18
Minor axis = 12 Axes of symmetry: $x=3,\ y=-2$



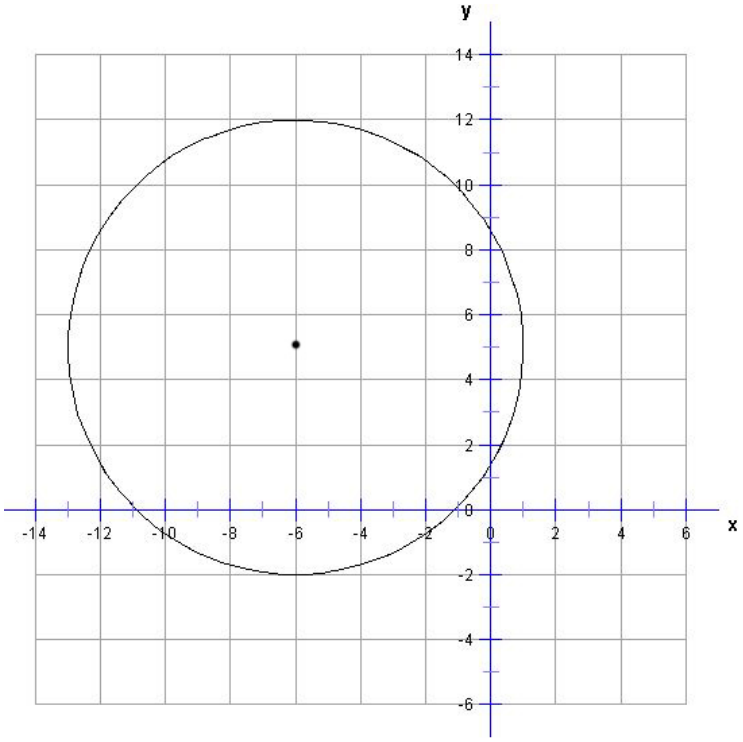
9) Parabola $x = -2(y-4)^2+7$ Vertex = $(7,4)$ Focus = $(\frac{55}{8},4)$

Directrix: $x = \frac{57}{8}$ Axis of symmetry: $y = 4$



10) Circle $(x+6)^2+(y-5)^2 = 49$ Center = $(-6,5)$ Focus = $(-6,5)$

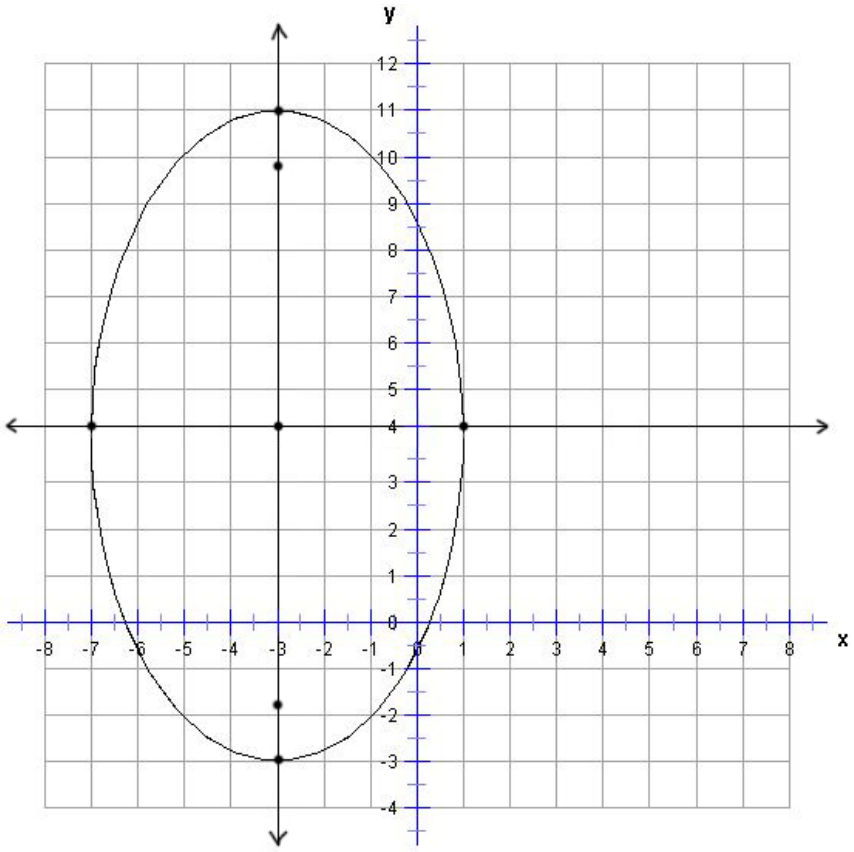
Radius = 7 Axes of symmetry: All lines going through the center



11) Ellipse $\dfrac{(x+3)^2}{16}+\dfrac{(y-4)^2}{49}=1$ Vertices = $(-7,4),(1,4),(-3,-3),(-3,11)$

Center = $(-3,4)$ Foci = $(-3,4+\sqrt{33}),(-3,4-\sqrt{33})$ Major axis = 14

Minor axis = 8 Axes of symmetry: $x=-3,\ y=4$



12) $(x+1)^2+(y-1)^2=52$

13) Parabola $y=\dfrac{-1}{12}(x+5)^2+5$

14) Ellipse $\dfrac{(x+2)^2}{36}+\dfrac{(y-1)^2}{16}=1$

15) $x=\dfrac{-1}{20}(y+3)^2+6$

16) $(x+1)^2+(y+3)^2=41$

17) Ellipse $\dfrac{(x-3)^2}{100}+\dfrac{(y+2)^2}{36}=1$

18) Parabola $x=\dfrac{-1}{2}(y-5)^2+3$

19) Ellipse $\dfrac{(x-3)^2}{25}+\dfrac{(y-1)^2}{64}=1$

20) Circle $(x+2)^2+(y-1)^2=52$