Math 101 Tutorial Worksheet 11

There is an associated quiz due on BrightSpace on Thursday, April 5 at 10:00 PM

1. Sketch the curve described by the parametric equation (indicating the orientation):

   (a) $x = t^2 - 4, y = \dfrac{t}{2}, \quad -2 \leq t \leq 3.$

   (b) $x = 4t^2 - 4, y = t, \quad -1 \leq t \leq \dfrac{3}{2}.$

   (c) $x = 2t, y = |t - 2|$

   (d) $x = e^t, y = e^{3t} + 1$

2. Find the slope and concavity for the given curve:

   (a) $x = \sqrt{t}, y = \dfrac{1}{4}\left(t^2 - 4\right), \quad t \geq 0$ at the point $(2, 3)$;

   (b) $x = t + 1, y = t^2 + 3t$ at the point $\left(1, -\dfrac{3}{4}\right)$ and $(0, -2)$;

   (c) $x = 4\cos\theta, y = 4\sin\theta$ at $\theta = \dfrac{\pi}{4}$.

3. Find all points (if any) of horizontal and vertical tangency to curve:

$$x = 5 + 3\cos\theta, \quad y = -2 + \sin\theta$$