1. Find dy/dx if $y \cos(x) = x^2 + y^2$

2. Show that $(-3\sqrt{3},1)$ lies on the asteroid $x^{2/3} + y^{2/3} = 1$. Then compute dy/dx at that point.

3. Find dy/dx if $y = \arcsin(3x)$.

4. Find dy/dx if $y = \arctan(\sqrt{4-x^2})$.

5. A 12-foot ladder is leaning against a wall. Let x denote the distance of the base of the ladder from the wall, and let θ be the angle between the ladder and the wall. How fast does the angle θ change with respect to x?

6. I compute that $d\theta/dx \approx 0.1$ when x = 7. What does this mean in language your parents can understand? Feel free to express your answer in terms of degrees instead of radians.