1. Find a formula for each derivative:
   (a) $U(x) = \ln(x + \sqrt{x^2 - 1})$
   (b) $N(x) = \exp(-x)\cos(5\pi x)$
   (c) $K(x) = \sec^{-1}(1/x)$
   (d) $U(x) = \left(\tan^{-1}(x)\right)^2$
   (e) $N(x) = \left(\tan^{-1}(x)\right)^{-1}$
   (f) $K(x) = \left(\cos^{-1}(x)\right)^{-1}$
   (g) $U(x) = \left(\cot^{-1}(1/x)\right)^2$
   (h) $N(x) = \left(\cot^{-1}(1/x)\right)^{-1}$
   (i) $K(x) = \left(\sec^{-1}(1/x)\right)^{-1}$
   (j) $U(x) = \cos(x)\sin(x)$
   (k) $N(x) = \tan(x)\cot(x)$
   (l) $K(x) = \tan^{-1}(x)\tan(x)$
   (m) $U(x) = 2\cos(x)\sin(x) - \sin(2x)$
   (n) $N(x) = \cos(|x^2 - 1|)^2 + \sin(|x^2 - 1|)^2$
   (o) $K(x) = \tan^{-1}(x)\tan(x)$
2. Find all *horizontal tangents* to the Devil's curve $y^4 - x^4 + 8x^2 - 4y^2 = 0$.
3. Find a formula for $\frac{\mathrm{d}y}{\mathrm{d}x}$ given that $y^4 - x^4 + 8x^2 - 4y^2 = 0$.
4. Define a function $Q(x) = (2x-1)\lfloor x \rfloor - \lfloor x \rfloor^2$. It's a fun fact to know and to tell that Q is differentiable everywhere and that $Q'(x) = 2\lfloor x \rfloor$. Find a formula for the derivative of

$$W(x) = (2x^2 - 1)\lfloor x^2 \rfloor - \lfloor x^2 \rfloor^2.$$