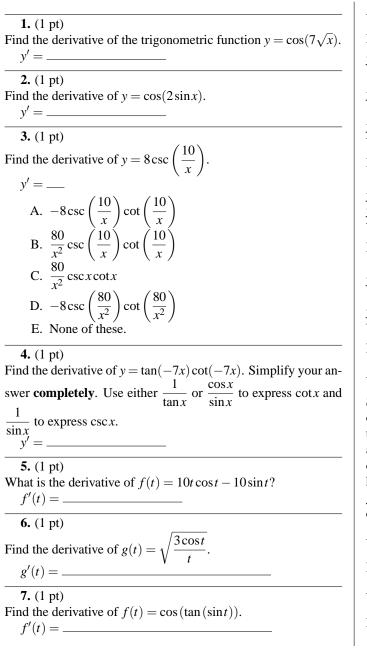
## Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel Exercises for Section 2.9

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<b>8.</b> (1 pt)
Find equations for lines that are tangent and normal to the curve
$y = \cos\left(7x + \frac{\pi}{2}\right)$ at the point (0,0).
Line tangent to curve:
y =
Line normal to curve:
<i>y</i> =
<b>9.</b> (1 pt)
Let $y = \sin(2x^2)$ . Find each of the following.
y' =
y" =
y''' =
<b>10.</b> (1 pt)
Let $y = tan(-9x)$ . Find each of the following.
y' =
y" =
Express $y''$ in terms of y.
y'' =
<b>11.</b> (1 pt)
Let $f(x) = \sec(x)$ and $g(x) = f'(x)$ . What is $g'(x)$ ?
g'(x) =
<b>12.</b> (1 pt)
Sisyphus, the great ruler of Corinth known for his trickery and
deceit, was captured and punished in Tartalus. When cap-
tured, his punishment was to roll a heavy stone to the top of
a hill. Upon reaching the top, the stone would invariably slip
down the other side, forcing Sisyphus to begin anew. If the
height of the stone at time t can be described by the function
$f(t) = 19(\sin(t))^2$ cubits, what function describes the rate of
change in the height of the stone?
cubits / second

<b>13.</b> (1 pt)	_
Find the derivative of $19\cos(\cos(6x))$ at $x =$	$\frac{\pi}{2}$ .

**14.** (1 pt)

Find the derivative of  $\sqrt{\cos^2(5x) + \sin^2(5x)}$ .