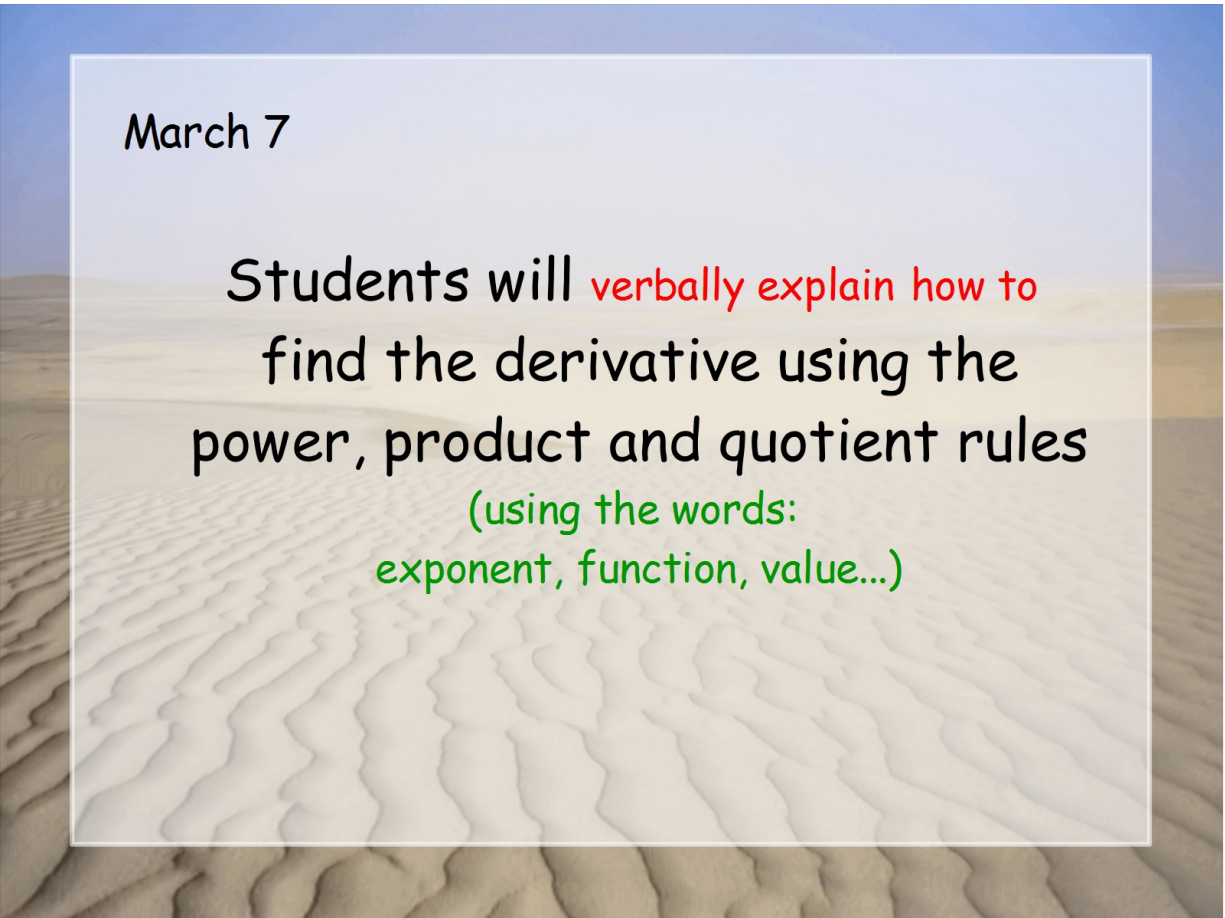
The background of the slide is a photograph of sand dunes with a blue sky. The dunes are in the foreground and middle ground, showing a rhythmic pattern of ridges and valleys. The sky is a clear, pale blue.

March 7

Do you want to live to be 100?  
Why or Why not?

The background of the slide is a photograph of sand dunes with a blue sky. The dunes are in the foreground and middle ground, showing a rhythmic pattern of ridges and valleys. The sky is a clear, pale blue.

March 7

Students will verbally explain how to  
find the derivative using the  
power, product and quotient rules  
(using the words:  
exponent, function, value...)

x	0	1	2	3
f(x)	2	4	6	8
f'(x)	-1	5	7	4
g(x)	-1	-3	6	9
g'(x)	3	-2	5	10

find the derivative of  $g(x) \cdot f(x)$  at  $x = 0$

$$\begin{aligned}
 \frac{d}{dx}(g(x) \cdot f(x)) &= g'(x)f(x) + f'(x)g(x) \\
 &= g'(0)f(0) + f'(0)g(0) = 3(2) + (-1)(-1) \\
 &= 6 + 1 = 7
 \end{aligned}$$

x	0	1	2	3
f(x)	2	4	6	8
f'(x)	-1	5	7	4
g(x)	-1	-3	6	9
g'(x)	3	-2	5	10

find the derivative of  $x^3 \cdot f(x)$  at  $x = 3$

$$\begin{aligned}
 \frac{d}{dx}(x^3 \cdot f(x)) &= 3x^2 \cdot f(x) + f'(x)x^3 \\
 &= 3(3)^2 \cdot f(3) + f'(3)3^3 \\
 &= 27(8) + 4(27) = 216 + 108 \\
 &= 324
 \end{aligned}$$

x	0	1	2	3
f(x)	2	4	6	8
f'(x)	-1	5	7	4
g(x)	-1	-3	6	9
g'(x)	3	-2	5	10

find the derivative of  $\frac{g(x)}{f(x)}$  at  $x = 2$

$$\begin{aligned}
 \frac{d}{dx} \left( \frac{g(x)}{f(x)} \right) &= \frac{g'(x)f(x) - f'(x)g(x)}{f(x)^2} \\
 &= \frac{g'(2)f(2) - f'(2)g(2)}{f(2)^2} = \frac{5(6) - 7(6)}{6^2} \\
 &= \frac{30 - 42}{36} = \frac{-12}{36} = -\frac{1}{3}
 \end{aligned}$$