



Congratulations! You passed!

[Next Item](#)



1. In the following quiz, you will practice how to use the chain rule. Some questions look tricky, but just stick to the rules you know!

1 / 1  
points

If  $f(x) = g(h(x))$ , what is the differential of  $f$  with respect to  $x$ , in terms of  $g$  and  $h$ ?

- ☐  $f'(x) = g'(h(x))$
- ☒  $f'(x) = g'(h(x))h'(x)$

Correct

This is the chain rule.

- ☐  $f'(x) = g'(h'(x))h'(x)$
- ☐  $f'(x) = g'(h'(x))$



2. Differentiate with respect to  $x$  the function  $f(x) = \sqrt{x^3 - 2x} = (x^3 - 2x)^{1/2}$ .

1 / 1  
points

- ☐  $f'(x) = \frac{x^3 - 2x}{2\sqrt{x^3 - 2x}}$
- ☐  $f'(x) = \frac{1}{2\sqrt{x^3 - 2x}}$
- ☒  $f'(x) = \frac{3x^2 - 2}{2\sqrt{x^3 - 2x}}$

Correct

This is the chain rule.

- ☐  $f'(x) = \sqrt{3x^2 - 2}$



3. Differentiate with respect to  $x$  the function  $f(x) = e^{x^3 - 3}$ .

1 / 1  
points

- ☐  $f'(x) = (x^3 - 3)e^{3x^2}$
- ☐  $f'(x) = e^{3x^2}$
- ☒  $f'(x) = 3x^2e^{x^3 - 3}$

Correct

This is the chain rule!

- ☐  $f'(x) = (x^3 - 3)e^{x^3 - 3}$



4. Differentiate with respect to  $x$  the function  $f(x) = \sqrt{e^{x+2}}$ .

1 / 1  
points

- ☐  $f'(x) = \frac{1}{2e^{x+2}}$
- ☒  $f'(x) = \frac{\sqrt{e^{x+2}}}{2}$

Correct

This is the chain rule applied twice.

- ☐  $f'(x) = \frac{1}{\sqrt{e^{x+2}}}$
- ☐  $f'(x) = \sqrt{e^{x+2}}$



5. If  $f(t) = f(y(x(t)))$ , what is the differential of  $f$  with respect to  $t$ , in terms of  $f$ ,  $y$ ,  $x$  and  $t$ ?

1 / 1  
points

- ☒  $f'(t) = f'(y(x(t))) \cdot y'(x(t)) \cdot x'(t)$

Correct

This is the chain rule applied twice.

- ☐  $f'(t) = f'(y'(x'(t))) \cdot y'(x'(t)) \cdot x'(t)$
- ☐  $f'(t) = f'(y(x(t))) \cdot y'(x(t))$
- ☐  $f'(t) = f'(y'(x'(t)))$