Practicing the chain rule

Practice Quiz, 5 questions

5/5 points (100.00%)

Congratulations! You passed! Next Item

1 / 1 point

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!

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

- [x] $f'(x) = g'(h(x))h'(x)$

Correct
This is the chain rule.

- [ ] $f'(x) = g'(h(x))$
- [ ] $f'(x) = g'(h'(x))h'(x)$
- [ ] $f'(x) = g'(h'(x))$

1 / 1 point

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

- [x] $f'(x) = \frac{3x^2 - 2}{2\sqrt{x^3 - 2x}}$

Correct
This is the chain rule.

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

1 / 1 point

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

- [ ] $f'(x) = (x^3 - 3)e^{x^3 - 3}$
- [ ] $f'(x) = (x^3 - 3)e^{3x^2}$
- [ ] $f'(x) = e^{3x^2}$
- [x] $f'(x) = 3x^2 e^{x^3 - 3}$

Correct
This is the chain rule!

1 / 1 point

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

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

Correct
This is the chain rule applied twice.

- [ ] $f'(x) = \sqrt{e^{x+2}}$

1 / 1 point

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?

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

Correct
This is the chain rule applied twice.

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