

## Tabla de derivadas

| Función                                     | Derivada   |
|---|--|
| <b>Derivada de una constante</b>            |  |
| $f(x) = k$                                  | $f'(x) = 0$  |
| <b>Ejemplos:</b>                            |  |
| $f(x) = 5$                                  | $f'(x) = 0$  |
| $f(x) = -3$                                 | $f'(x) = 0$  |
| <b>Derivada de x</b>                        |  |
| $f(x) = x$                                  | $f'(x) = 1$  |
| <b>Derivadas funciones potenciales</b>      |  |
| $f(x) = u^k$                                | $f'(x) = k \cdot u^{k-1} \cdot u'$                                 |
| <b>Ejemplos</b>                             |  |
| $f(x) = x^2$                                | $f'(x) = 2 \cdot x$  |
| $f(x) = x^5$                                | $f'(x) = 5 \cdot x^4$  |
| $f(x) = 1/x^5 = x^{-5}$                     | $f'(x) = -5x^{-6} = -5/x^6$  |
| $f(x) = \sqrt{x} = x^{\frac{1}{2}}$         | $f'(x) = \frac{1}{2} \cdot x^{-\frac{1}{2}} = \frac{1}{2\sqrt{x}}$ |
| $f(x) = (2 \cdot x^2 + 3)^2$                | $f'(x) = 2 \cdot (2 \cdot x^2 + 3) \cdot 4x$                       |
| <b>Derivadas de funciones exponenciales</b> |  |
| $f(x) = e^u$                                | $f'(x) = u' \cdot e^u$   |
| $f(x) = a^u$                                | $f'(x) = u' \cdot a^u \cdot \ln a$                                 |

### Ejemplos

|              |                           |
|--------------|---------------------------|
| $f(x) = e^x$ | $f'(x) = e^x$             |
| $f(x) = 2^x$ | $f'(x) = 2^x \cdot \ln 2$ |

### Derivadas de funciones logarítmicas

|                   |                                 |
|-------------------|---------------------------------|
| $f(x) = \ln u$    | $f'(x) = u' / u$                |
| $f(x) = \log_a u$ | $f'(x) = \frac{u'}{u} \log_a e$ |

### Ejemplos

|                   |                                |
|-------------------|--------------------------------|
| $f(x) = \ln x$    | $f'(x) = 1 / x$                |
| $f(x) = \log_2 x$ | $f'(x) = \frac{1}{x} \log_2 e$ |

### Derivadas de funciones trigonométricas

|                                 |  |
|---------------------------------|--|
| $f(x) = \sin u$                 | $f'(x) = u' \cdot \cos u$  |
| $f(x) = \cos u$                 | $f'(x) = -u' \cdot \sin u$   |
| $f(x) = \operatorname{tg} u$    | $f'(x) = u' \cdot \sec^2 u$  |
| $f(x) = \operatorname{cotg} u$  | $f'(x) = -u' \cdot \operatorname{cosec}^2 u$                           |
| $f(x) = \sec u$                 | $f'(x) = u' \cdot \sec u \cdot \operatorname{tg} u$                    |
| $f(x) = \operatorname{cosec} u$ | $f'(x) = -u' \cdot \operatorname{cosec} u \cdot \operatorname{cotg} u$ |
| $f(x) = \arcsen u$              | $f'(x) = \frac{u'}{\sqrt{1 - u^2}}$                                    |
| $f(x) = \arccos u$              | $f'(x) = \frac{-u'}{\sqrt{1 - u^2}}$                                   |
| $f(x) = \operatorname{arctg} u$ | $f'(x) = \frac{u'}{1 + u^2}$   |

### Ejemplos

|                           |   |
|---------------------------|---|
| $f(x) = \text{sen } x$    | $f'(x) = \text{cos } x$                         |
| $f(x) = \text{cos } x$    | $f'(x) = -\text{sen } x$                        |
| $f(x) = \text{tg } x$     | $f'(x) = \text{sec}^2 x$                        |
| $f(x) = \text{cot } x$    | $f'(x) = -\text{cosec}^2 x$                     |
| $f(x) = \text{sec } x$    | $f'(x) = \text{sec } x \cdot \text{tg } x$      |
| $f(x) = \text{cosec } x$  | $f'(x) = -\text{cosec } x \cdot \text{cotg } x$ |
| $f(x) = \text{arcsen } x$ | $f'(x) = \frac{1}{\sqrt{1-x^2}}$                |
| $f(x) = \text{arccos } x$ | $f'(x) = \frac{-1}{\sqrt{1-x^2}}$               |
| $f(x) = \text{arctg } x$  | $f'(x) = \frac{1}{1+x^2}$                       |

### Derivadas de sumas, restas, productos y cocientes de funciones

|                      |   |
|----------------------|---|
| $f(x) = K \cdot u$   | $f'(x) = K \cdot u'$                          |
| $f(x) = u + v - w$   | $f'(x) = u' + v' - w'$                        |
| $f(x) = u \cdot v$   | $f'(x) = u' \cdot v + v' \cdot u$             |
| $f(x) = \frac{u}{v}$ | $f'(x) = \frac{u' \cdot v - v' \cdot u}{v^2}$ |

### Ejemplos

|                                  |  |
|----------------------------------|--|
| $f(x) = 3x^2$                    | $f'(x) = 3 \cdot 2 \cdot x = 6x$                             |
| $f(x) = x^4 + x^3 - 2x$          | $f'(x) = 4x^3 + 3x^2 - 2$                                    |
| $f(x) = x^3 \cdot \text{sen } x$ | $f'(x) = 3x^2 \cdot \text{sen } x + x^3 \cdot \text{cos } x$ |

$$f(x) = \frac{\text{sex}}{x^2}$$

$$f'(x) = \frac{\cos x \cdot x^2 - \text{sen } x \cdot 2x}{x^4}$$

Si tienes cualquier duda y quieres ponerte en contacto conmigo, puedes hacerlo escribiéndome a [yosoytuprofe.miguel@gmail.com](mailto:yosoytuprofe.miguel@gmail.com), o bien a través de mis perfiles en redes sociales ([Facebook](#), [Twitter](#), [Instagram](#) o [YouTube](#)).

Nos vemos en la siguiente clase.

