$f(x)=e^{x^2}$

$$f(x)=e^{x^2}$$

1) copy e^{x^2}

2) differentiate x^2

$$f'(x)=e^{x^2}\frac{d}{dx}x^2$$

copy e^{x^2}

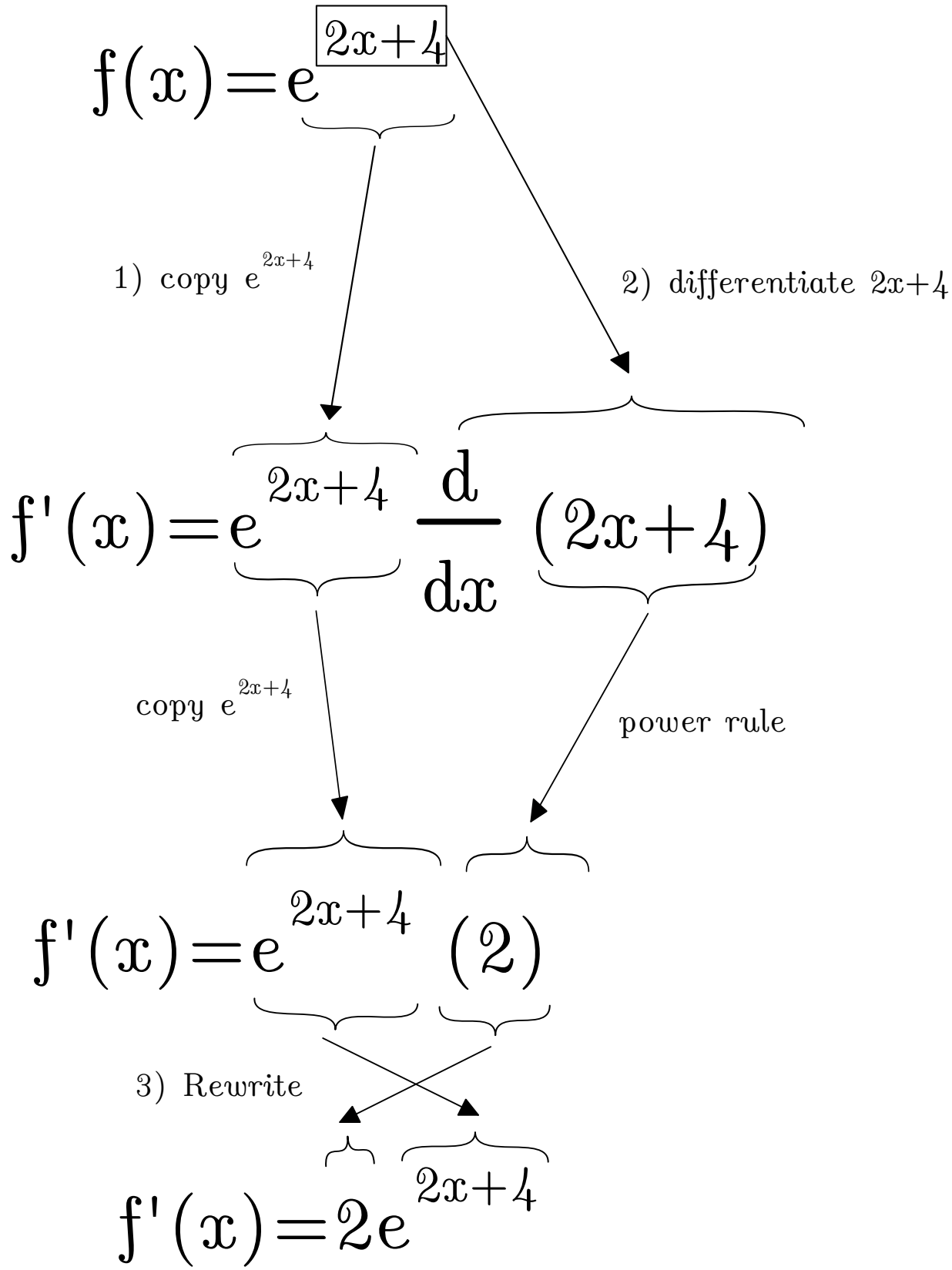
power rule

$$f'(x)=e^{x^2}(2x)$$

3) Rewrite

$$f'(x)=2xe^{x^2}$$

$f(x)=e^{2x+4}$


f(x)=e^{2x+4}
1) copy e^{2x+4}
2) differentiate 2x+4
f'(x)=e^{2x+4} d/dx (2x+4)
copy e^{2x+4}
power rule
f'(x)=e^{2x+4} (2)
3) Rewrite
f'(x)=2e^{2x+4}

$f(x)=e^{\sin(x)}$

$$f(x)=e^{\sin(x)}$$

1) copy $e^{\sin(x)}$

2) differentiate $\sin(x)$

$$f'(x)=e^{\sin(x)}\ \frac{d}{dx}\sin(x)$$

copy $e^{\sin(x)}$

rule for $\sin(x)$

$$f'(x)=e^{\sin(x)}\ \cos(x)$$

3) Rewrite

$$f'(x)=\cos(x)e^{\sin(x)}$$

$f(x)=e^{\cos(x)}$

$$f(x)=e^{\cos(x)}$$

1) copy $e^{\cos(x)}$

2) differentiate $\cos(x)$

$$f'(x)=e^{\cos(x)}\ \frac{d}{dx}\cos(x)$$

copy $e^{\cos(x)}$

rule for $\cos(x)$

$$f'(x)=e^{\cos(x)}\ (-\sin(x))$$

3) Rewrite

$$f'(x)=-\sin(x)e^{\cos(x)}$$

$f(x)=e^{\tan^{-1}(x)}$

$$f(x)=e^{\tan^{-1}(x)}$$

1) copy $e^{\tan^{-1}(x)}$

2) differentiate $\tan^{-1}(x)$

$$f'(x)=e^{\tan^{-1}(x)}\frac{d}{dx}\tan^{-1}(x)$$

copy $e^{\tan^{-1}(x)}$

Rule for tan inverse

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

3) Rewrite

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

$f(x)=e^{x^2+x+2}$

$$f(x)=e^{x^2+x+2}$$

1) copy e^{x^2+x+2}

2) differentiate x^2+x+2

$$f'(x)=e^{x^2+x+2}\,\frac{d}{dx}\,x^2+x+2$$

copy e^{x^2+x+2}

use the power rule

$$f'(x)=e^{x^2+x+2}\,(2x+1)$$

3) Rewrite

$$f'(x)=(2x+1)e^{x^2+x+1}$$

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f(x)=cos(2x+4)

$$f(x)=\cos(2x+4)$$

1) differentiate cos

2) copy 2x+4

3) differentiate 2x+4

$$f'(x)=-\sin(2x+4)\frac{d}{dx}(2x+4)$$

copy

use the power rule

$$f'(x)=-\sin(2x+4)(2)$$

3) Rewrite

$$f'(x)=-2\sin(2x+4)$$

f(x)=ln(cos(x))

$$f(x)=\ln(\cos(x))$$

1) differentiate ln

2) copy cos into bottom

3) Multiply by the derivative of cos

$$f'(x)=\frac{1}{\cos(x)}\frac{d}{dx}\cos(x)$$

copy

use the rule for cosine

$$f'(x)=\frac{1}{\cos(x)}(-\sin(x))$$

place -sin on top

$$f'(x)=\frac{-\sin(x)}{\cos(x)}=-\tan(x)$$