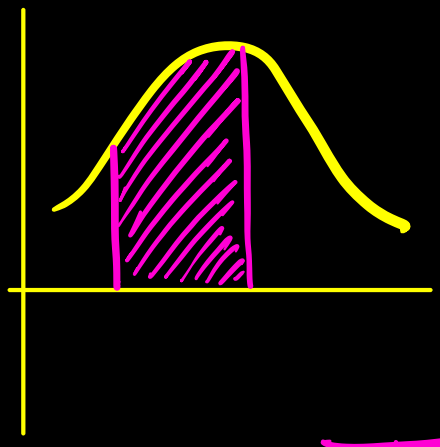
$\int$ Boot camp dx



Just Wing It:

List of Known examples:

Derivatives I know:

$\frac{d}{dx} x^{10} = 10x^9$ $x^{1/2}$ also

$\frac{d}{dx} \sin x = \cos x$

$\frac{d}{dx} \cos x = -\sin x$

$\frac{d}{dx} \ln x = 1/x$

$d/dx\, e^x = e^x$

$\int 10x^9\, dx = x^{10}$

$\int \cos x\, dx = \sin x$

$\int -\sin x\, dx = \cos x$

$\int 1/x\, dx = \ln x$

$$\frac{d}{dx} e^x \cos x = e^x \cos x + e^x \cdot (-\sin x)$$

$$= e^x \cos x - e^x \sin x$$

$$\int e^x \, dx = e^x$$

$$\int (e^x \cos x - e^x \sin x) \, dx$$

$$= e^x \cos x.$$

$$\int f(x) + g(x) \, dx = \int f(x) \, dx + \int g(x) \, dx$$

$$\int 10 f(x) \, dx = 10 \int f(x) \, dx$$

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1. $\int x \, dx = \frac{x^2}{2}$

2. $\int (3x - 7) \, dx$

$$3\int x\,dx - 7\underbrace{\int 1\,dx}_{x}$$

$$3\left(\frac{x^2}{2}\right) - x$$

$$\boxed{\frac{3}{2}x^2 - x}$$

3. $$\int 4x^2 - \pi x + \sqrt{2}\,dx$$

$$\boxed{\frac{4}{3}x^3 - \frac{\pi}{2}x^2 + (\sqrt{2})x}$$

4. $\int -GMm \cdot x^{-1} \, dx$

$-GMm \int x^{-1} \, dx$

$= -GMm \cdot \ln x$

$\frac{1}{3}\left(x^3 - 3x + 10\right)$

x^{2021}

$\frac{x^3}{3x^{2021}} - \frac{3x}{3x^{2021}} + \frac{10}{3x^{2021}}$

$\int \frac{1}{3}\left(x^{-2018} - 3x^{-2020} + 10x^{-2021}\right) dx$

$$= \frac{1}{3}\left(\frac{x^{-2017}}{-2017} - 3\frac{x^{-2019}}{-2019} + \frac{10\,x^{-2020}}{(-2020)} \right)$$

THAT = $z^{osu} + y^{bmp}$

8. $\frac{1}{THAT} \int xyz + 13x^{-2}y^3 \, dx$

$$\frac{x^2yz}{2} + \frac{13x^{-1}}{\text{(illegible)}}y^3$$

9. $\frac{\sin\theta + x\cos\theta}{\theta\sqrt{x}}$ $(+ Ez)$

$$\frac{\sin\theta}{\theta\sqrt{x}} + \frac{x\cos\theta}{\theta\sqrt{x}}$$

$$\int \left(\frac{\sin\theta}{\theta} x^{-1/2} + x^{1/2} \cdot \frac{\cos\theta}{\theta} \right) dx$$

$$\left[\frac{\sin\theta}{\theta} 2 \cdot x^{+1/2} + \frac{x^{3/2}}{3/2} \left(\frac{\cos\theta}{\theta} \right) \right].$$

10. $$\int 23.3\, x^{2.2} + 4.9\,(xy)^{39}\, dx$$

$$\frac{23.3\, x^{3.2}}{3.2} + 4.9\, x^{39} y^{39} + 4.9\, y^{39} \cdot x^{40}$$

rewriting

$\frac{}{40}$

11. $\sqrt{xy+x\theta}$

$\sqrt{x(y+\theta)} = \sqrt{x}\cdot\sqrt{y+\theta}$

$\sqrt{x} = x^{1/2}$

confusing CONSTANT.

$\int \sqrt{x}\,\sqrt{y+\theta}$

$\int x^{1/2}\,\sqrt{y+\theta}$

$\frac{x^{3/2}}{3/2}\sqrt{y+\theta}$

12. $\int \sin x\,dx$

$= -\cos x$

13. $\int 2\cos x \, dx$

$= 2\sin x.$

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15. $\int \sin(4x) \, dx$

Check: $-\frac{1}{4}\cos 4x$

$$\int \cos 5x \, dx$$

17. Dumb

18. $\int e^{7x} \, dx$

$\overset{\star}{=} \frac{1}{7} e^{7x}$

IBP:

$$\int u\,dv = uv - \int v\,du$$

Make current integral FIT this Rubric.

TRADE

hopefully easier!!