BRAVO Me

$ax^2 + bx + c = 0$

$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

$x^3 - y^3 = (x-y)(x^2+xy+y^2)$

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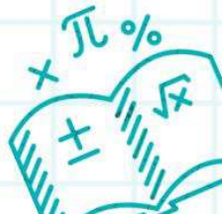
Important Rules before starting Math-206



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Differentiation Rules

Constant and Power Functions

1. $\frac{d}{dx}(a) = 0$
2. $\frac{d}{dx}\left([f(x)]^n\right) = n[f(x)]^{n-1} f'(x)$

Exponentials Function

3. $\frac{d}{dx}(a^{f(x)}) = f'(x)a^{f(x)} \ln a$
4. $\frac{d}{dx}(e^{f(x)}) = f'(x)e^{f(x)}$

Logarithmic Functions

5. $\frac{d}{dx}(\ln(f(x))) = \frac{f'(x)}{f(x)}$
6. $\frac{d}{dx}(\log_a(f(x))) = \frac{f'(x)}{f(x)\ln a}$

Product Rule

7. $\frac{d}{dx}(f(x)g(x)) = f(x)g'(x) + f'(x)g(x)$

Quotient Rule

8. $\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{g(x)f'(x) - g'(x)f(x)}{[g(x)]^2}$

Trigonometric Inverse Functions

15. $\frac{d}{dx}\left(\sin^{-1}(f(x))\right) = \frac{f'(x)}{\sqrt{1-[f(x)]^2}}$
16. $\frac{d}{dx}\left(\cos^{-1}(f(x))\right) = \frac{-f'(x)}{\sqrt{1-[f(x)]^2}}$
17. $\frac{d}{dx}\left(\tan^{-1}(f(x))\right) = \frac{f'(x)}{1+[f(x)]^2}$
18. $\frac{d}{dx}\left(\cot^{-1}(f(x))\right) = \frac{-f'(x)}{1+[f(x)]^2}$
19. $\frac{d}{dx}\left(\sec^{-1}(f(x))\right) = \frac{f'(x)}{f(x)\sqrt{[f(x)]^2-1}}$
20. $\frac{d}{dx}\left(\csc^{-1}(f(x))\right) = \frac{-f'(x)}{f(x)\sqrt{[f(x)]^2-1}}$

$ax^2+bx+c=0$ $M=\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$ $x^3-y^3=(x-y)(x^2+xy+y^2)$

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Section 3.11

Hyperbolic and Hyperbolic Inverse Functions

21. $\frac{d}{dx}(\sinh(f(x))) = f'(x)\cosh(f(x))$
22. $\frac{d}{dx}(\cosh(f(x))) = f'(x)\sinh(f(x))$
23. $\frac{d}{dx}(\tanh(f(x))) = f'(x)\operatorname{sech}^2(f(x))$
24. $\frac{d}{dx}(\cot(f(x))) = -f'(x)\operatorname{csch}^2(f(x))$
25. $\frac{d}{dx}(\operatorname{sech}(f(x))) = -f'(x)\operatorname{sech}(f(x))\tanh(f(x))$
26. $\frac{d}{dx}(\operatorname{csch}(f(x))) = -f'(x)\operatorname{csch}(f(x))\coth(f(x))$
27. $\frac{d}{dx}\left(\sinh^{-1}(f(x))\right) = \frac{f'(x)}{\sqrt{1+[f(x)]^2}}$
28. $\frac{d}{dx}\left(\cosh^{-1}(f(x))\right) = \frac{f'(x)}{\sqrt{[f(x)]^2-1}}$
29. $\frac{d}{dx}\left(\tanh^{1}(f(x))\right) = \frac{f'(x)}{1-[f(x)]^2}$
30. $\frac{d}{dx}\left(\coth^{-1}(f(x))\right) = \frac{f'(x)}{1-[f(x)]^2}$
31. $\frac{d}{dx}\left(\operatorname{sech}^{-1}(f(x))\right) = \frac{-f'(x)}{f(x)\sqrt{1-[f(x)]^2}}$
32. $\frac{d}{dx}\left(\operatorname{csch}^{-1}(f(x))\right) = \frac{-f'(x)}{|f(x)|\sqrt{[f(x)]^2+1}}$

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* $(a+b)^2 = a^2 + 2ab + b^2$

* $\dfrac{\frac{a}{b}}{\frac{c}{d}} = \dfrac{a \cdot d}{c \cdot b}$

مقام البسط = مقام
مقام المقام = بسط

* $\lim\limits_{x \to 0^+} \ln(x) = -\infty$

* $\ln(1) = 0$

* $\dfrac{1}{\infty} = 0$

* $\dfrac{1}{0} = \infty$

$\int$

BRAVO Me

$ax^2 + bx + c = 0$

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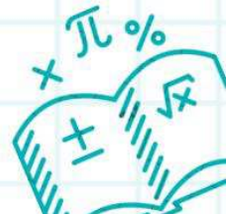
θ	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
$\sin\theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos\theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0

* $\sin^2(x) = \frac{1}{2}(1 - \cos(2x))$
* $\cos^2(x) = \frac{1}{2}(1 + \cos(2x))$ Important
* $\sin^2(x) + \cos^2(x) = 1$

* $\tan(x) = \frac{\sin(x)}{\cos(x)}$
* $\tan^{-1}(\infty) = \frac{\pi}{2}$
* $\tan^{-1}(1) = \frac{\pi}{4}$
* $\tan^{-1}(0) = 0$

$\int$



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MATH-206