AP Calculus AB Name _____

Precalculus Review

This review is NON-CALCULATOR.

Factoring

Factor the following expressions completely.

1) $x^2 - 64$

2) $x^2 + 2x - 3$

3) $6x^2 - x - 2$

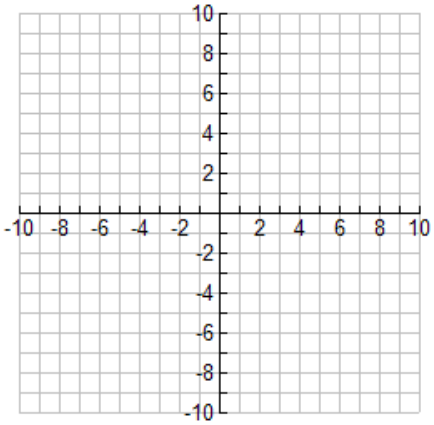
4) $x^2 - 3x - 88$

5) $8x^2 + 2x - 15$

6) $3x^2 + 10x + 8$

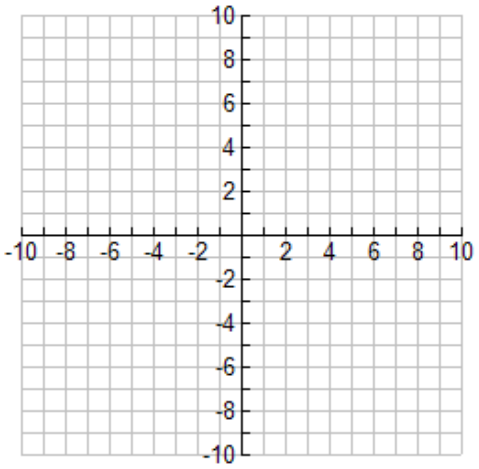
Linear and Quadratic Functions

7) Sketch the curves $y = 9 - x^2$ and $y = 2x + 1$, then find their points of intersection algebraically.

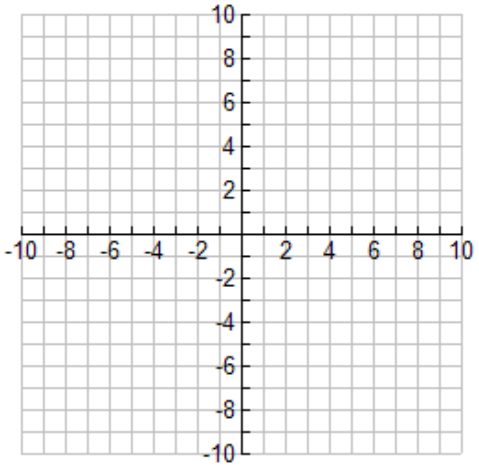


Piece-Wise Defined Functions

8) Sketch the graph of $f(x)=\begin{cases} 2x+1 & \text{if } x<-1 \\ 7 & \text{if } x=-1 \\ 9-x^2 & \text{if } x>-1 \end{cases}$



9) Sketch the graph of $f(x)=\begin{cases} x+1 & \text{if } x<1 \\ x^2 & \text{if } x\geq 1 \end{cases}$



Add/Subtract Rational Expressions

10) $\frac{5}{x-2}+\frac{8}{x+4}$

11) $\frac{1}{x+3}+\frac{3}{x+2}$

12) $\frac{4x}{x+2}-\frac{2}{x-5}$

Graphing Rational Equations

Sketch the graph of each equation by finding all vertical and horizontal asymptotes, holes and intercepts of the graph.

13) $f(x) = \dfrac{2x-8}{x+3}$

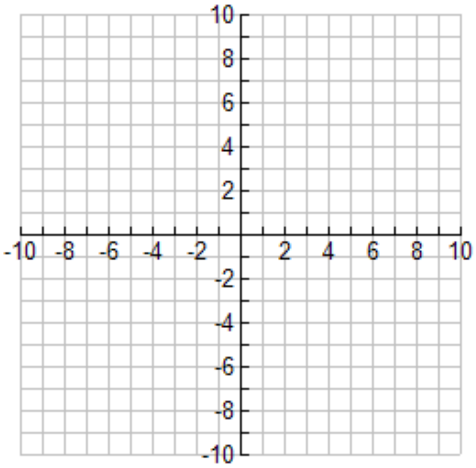
VA _____

HA _____

holes _____

x-intercepts _____

y-intercepts_____



14) $f(x) = \dfrac{x^2-9}{x^2-2x-3}$

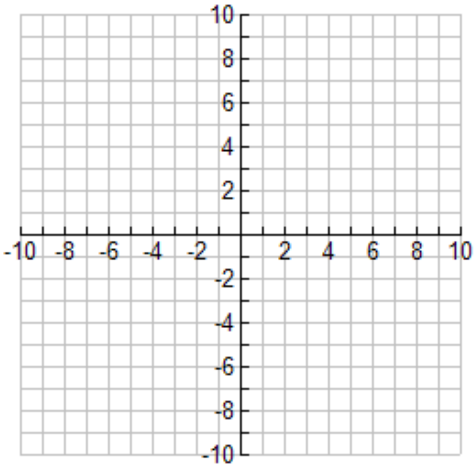
VA _____

HA _____

holes _____

x-intercepts_____

y-intercepts_____



15) $f(x) = \dfrac{x^3+x^2-2x-2}{x+1}$

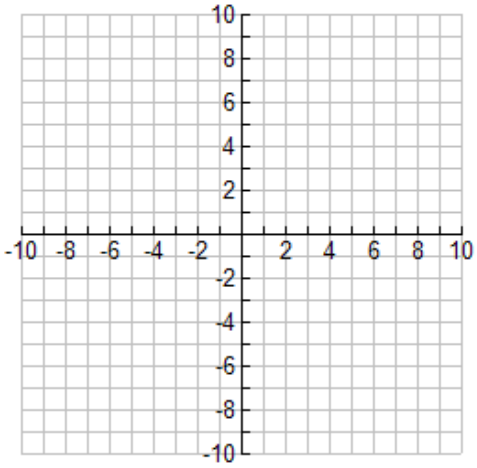
VA _____

HA _____

holes _____

x-intercepts _____

y-intercepts_____



Trigonometry

Find the exact value of each expression.

16) $\sin \frac{\pi}{6}$

17) $\cos\left(\frac{5\pi}{4}\right)$

18) $\tan \frac{2\pi}{3}$

19) $\csc\left(-\frac{5\pi}{6}\right)$

20) $\sec\left(\frac{\pi}{2}\right)$

21) $\cot\left(-\pi\right)$

Evaluate the following expressions in the interval $[0, 2\pi)$.

22) $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

23) $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$

24) $\sin^{-1}(0)$

25) $\tan^{-1}(0)$

26) $\cos^{-1}\left(-\frac{1}{2}\right)$

27) $\cos^{-1}(-1)$

Use trigonometric identities to simplify each expression.

28) $\cos x \tan x$

29) $\dfrac{\csc x}{\sec x}$

30) $\dfrac{1-\sin^2 x}{\csc^2 x - 1}$

31) $\dfrac{\sin x}{1-\cos^2 x}$

Find all solutions of the equation in the interval $[0, 2\pi)$.

32) $2 \cos x = 1$

33) $\sin^2 x + \sin x = 0$

34) $\tan^2 x = 3$

35) $2 \cos x = \cos^2 x$

36) $\sin x = \cos x$