

Review for Calculus I

Name:

Panther ID:

(1) Factor completely (a) $9x^2 - 4$

(b) $8x^3 - 27$;

(c) $6x^3 - 7x^2 - x + 2$

(d) $3(x+2)^2(2x+3)^4 + 6(x+2)^3(2x+3)^3$;

(i) $3(2x-1)^{2/3}(x+1)^3 + 12(2x-1)^{-1/3}(x+1)^4$;

(2) Solve for all x, (a) $\sin(3x) = (\sqrt{2})/2$

(b) $\cos(2x) = -(\sqrt{3})/2$

(c) $\tan(2x) = -1$

(d) $3x^4 + 14x^3 + 14x^2 - 8x - 8 = 0$

(e) $\sec(2x) = 2$

(f) $\csc(2x) = -2$

(3) Rationalize the denominator of $\frac{4 - \sqrt{2x+1}}{8 - 2\sqrt{3}}$

(4) Rationalize the numerator of $\frac{5 - \sqrt{2x+1}}{2x - 28}$

(5) $f(x) = \frac{3x-8}{6x}$ Find and simplify

(a) $\frac{f(3)-f(1)}{3-1}$

(b) $\frac{f(x)-f(1)}{x-1}$

(c) $\frac{f(1+h)-f(1)}{h}$

(6) Solve the equations $\ln(2x-3) = -1$ $e^{3x+1} = 2$

(7) Find the domain, range, period and sketch the graph of

a) $f(x) = \sqrt{4x+9}$

b) $g(x) = \cos(x)$

c) $h(x) = \tan(x)$

d) $k(x) = -x^2 + 1$

$r(x) = \arctan(x)$

$p(x) = \ln(-x)$

$t(x) = e^x$

(8) If $\cos \theta = 0.3$ find $\cos(2\theta)$, and $\sin(2\theta)$

(9) State 10 trigonometric identities

(10) State the exact values of all 6 trig. $\cos \theta, \sin \theta, \tan \theta, \sec \theta, \csc \theta, \cot \theta$ functions when

$$\theta = 0; \pi/6, \pi/4, \pi/3, \pi/2, 2\pi/3, 3\pi/4, 5\pi/6, 7\pi/6, 5\pi/4, 4\pi/3, 3\pi/2, 11\pi/6$$

(11) Graph $f(x) = \begin{cases} |x| & \text{if } x < -2 \\ 2x + 1 & \text{if } x > 1 \end{cases}$ What is the domain of f ? What is the range?

(12) Find the inverse of $f(x) = -\sqrt{3-2x}$. State the domain and range of the inverse

(13) Find an algebraic expression for $\cos \arcsin x$; $\sin \arccos x$; $\tan \arcsin x$; $\sin(\operatorname{arcsec} x)$

(14) Find an equation of the line through $(2, 7)$ and $(-5, 3)$

(15) Find an equation of the line through $(-1, -6)$ and perpendicular to the line $3x + 2y = -12$

(16) Find an equation of the line vertical line through $(17, -40)$

(17) Find an equation of the line through $(8, 13)$ and parallel to the line $-5x + 8y = -40$

(18) Identify and graph each equations $4(x-1)^2 + 9(y+2)^2 = 36$ $x-2 = (y+3)^2$