MATH105. COLLEGE ALGEBRA (MATH105-2) > TAKE ASSESSMENT: EXAM 3

Take Assessment: Exam 3

Name Exam 3

Instructions

Multiple Attempts This Test allows 2 attempts. This is attempt number 1.

Force Completion This Test can be saved and resumed later.

Question Completion Status:

Question 1 **5 points** Save

Solve the inequality.

$4x^2 + 17x < 15$

$\left(-\infty, \frac{3}{4}\right)$

(-5, ∞)

$\left(-5, \frac{3}{4}\right)$

(-∞, -5) or $\left(\frac{3}{4}, \infty\right)$

Question 2 **5 points** Save

Find all of the real zeros of the polynomial function, then use the real zeros to factor f over the real numbers.

$f(x) = 3x^3 - 5x^2 + 12x - 20$

-4, -1, $\frac{5}{3}$; f(x) = (3x - 5)(x + 1)(x + 4)

20; $f(x) = (x - 20)(3x^2 + 1)$

4, $\frac{5}{3}$, 1; f(x) = (3x - 5)(x - 1)(x - 4)

$\frac{5}{3}$; $f(x) = (3x - 5)(x^2 + 4)$

Question 3 **5 points** Save

Find the indicated intercept(s) of the graph of the function.

y-intercept of $f(x) = \frac{(5x - 15)(x - 4)}{x^2 + 12x - 19}$

(0, 3)

(0, 4)

$\left(0, \frac{60}{19}\right)$

$\left(0, -\frac{60}{19}\right)$

Question 4 **5 points** Save

Give the equation of the oblique asymptote, if any, of the function.

$h(x) = \frac{8x^2 - 3x - 2}{2x^2 - 2x + 9}$

y = 4x

y = 4

y = x + 4

no oblique asymptote

Question 5 **5 points** Save

Find all zeros of the function and write the polynomial as a product of linear factors.

$f(x) = x^4 + 6x^3 + 17x^2 + 54x + 72$

f(x) = (x - 4)(x + 2)(x - 3)(x + 3)

f(x) = (x + 4)(x + 2)(x - 3i)(x + 3i)

f(x) = (x - 1)(x - 8)(x - 3i)(x + 3i)

$f(x) = (x - i\sqrt{8})(x + i\sqrt{8})(x - 3)(x + 3)$

Question 6 **5 points** Save

Use the intermediate value theorem to determine whether the polynomial function has a zero in the given interval.

$f(x) = -2x^4 + 2x^2 + 4; [-2, -1]$

f(-2) = 20 and f(-1) = 5; no

f(-2) = -20 and f(-1) = 4; yes

f(-2) = 20 and f(-1) = -4; yes

f(-2) = -20 and f(-1) = -4; no

Question 7 **5 points** Save

Find all of the real zeros of the polynomial function, then use the real zeros to factor f over the real numbers.

$f(x) = 5x^4 - 7x^3 + 17x^2 - 21x + 6$

$-3, -1, 1, \frac{2}{5}$; f(x) = (x - 1)(5x - 2)(x + 1)(x + 3)

-3, -1, 1, $-\frac{2}{5}$; f(x) = (x - 1)(5x + 2)(x + 1)(x + 3)

3, $\frac{2}{5}$; f(x) = (x - 3)(5x - 2)(x^2 + 1)

1, $\frac{2}{5}$; f(x) = (x - 1)(5x - 2)(x^2 + 3)

Question 8 **5 points** Save

Solve the inequality.

$x^4 < 36x^2$

(-∞, -6) or (0, 6)

(-∞, -6) or (6, ∞)

(-6, 0) or (6, ∞)

(-6, 0) or (0, 6)

Question 9 **5 points** Save

Solve the inequality.

$x^2 - 2x \geq 0$

(-∞, 0] or [2, ∞)

[-2, 0]

(-∞, -2] or [0, ∞)

[0, 2]

Question 10 **5 points** Save

Analyze the graph of the rational function for the given step.

Find the vertical asymptote(s) and/or hole(s) for R(x) = $\frac{4}{(x^2 - 16)(x + 2)}$.

vertical asymptotes: x = 16, x = -2

vertical asymptotes: x = -4, x = 4; hole at $\left(-2, -\frac{1}{3}\right)$

vertical asymptotes: x = -4, x = 4, x = -2

vertical asymptote: x = -2

Question 11 **5 points** Save

Find all zeros of the function and write the polynomial as a product of linear factors.

$f(x) = x^3 + 8x^2 + 22x + 20$

f(x) = (x + 2)(x + 3 + i)(x + 3 - i)

f(x) = (x + 2)(x + 3 + i)(x - 3 - i)

f(x) = (x - 1)(x + 3 + $i\sqrt{3}$)(x + 3 - $i\sqrt{3}$)

f(x) = (x + 1)(x + 3 + $i\sqrt{3}$)(x - 2 - $i\sqrt{3}$)

Question 12 **5 points** Save

Form a polynomial whose zeros and degree are given.

Zeros: -3, -2, -1, 1; degree 4

$x^4 + 5x^3 + 5x^2 - 6x - 6$

$x^4 + 5x^2 - 6$

$x^4 - 5x^3 + 5x^2 + 5x - 6$

$x^4 + 5x^3 + 5x^2 - 5x - 6$

Question 13 **5 points** Save

Solve the problem.

A ball is thrown vertically upward with an initial velocity of 160 feet per second. The distance in feet of the ball from the ground after t seconds is $s = 160t - 16t^2$. For what interval of time is the ball more than 256 above the ground?

{x | 2 sec < x < 8 sec}

{x | 7 sec < x < 13 sec}

{x | 1.5 sec < x < 8.5 sec}

{x | 4.5 sec < x < 5.5 sec}

Question 14 **5 points** Save

Solve the problem.

Find k such that $f(x) = x^4 + kx^3 + 2$ has the factor x + 1.

-3

-2

3

2

Question 15 **5 points** Save

Find the domain of the rational function.

$f(x) = \dfrac{-2x(x + 2)}{3x^2 - 5x - 8}$

$\left\{x \middle| x \neq -\frac{3}{8}, 1\right\}$

$\left\{x \middle| x \neq \frac{3}{8}, -1\right\}$

$\left\{x \middle| x \neq \frac{8}{3}, -1\right\}$

$\left\{x \middle| x \neq -\frac{8}{3}, 1\right\}$

Question 16 **5 points** Save

Find the domain of the rational function.

$g(x) = \frac{x + 5}{x^2 + 49x}$

all real numbers

{x|x ≠ -7, x ≠ 7, x ≠ -5}

{x|x ≠ -7, x ≠ 7}

{x|x ≠ 0, x ≠ -49}

Question 17 **5 points** Save

Solve the inequality.

$x^2 + 6x \geq 0$

(-∞, -6] or [0, ∞)

(-∞, 0] or [6, ∞)

[0, 6]

[-6, 0]

Question 18 **5 points** Save

Give the equation of the oblique asymptote, if any, of the function.

$f(x) = \frac{2x^3 + 11x^2 + 5x - 1}{x^2 + 6x + 5}$.

y = 0

y = 2x - 1

y = 2x

y = 2x + 1

Question 19 **5 points** Save

Find the vertical asymptotes of the rational function.

$h(x) = \frac{x + 11}{x^2 - 9x}$

x = -3, x = 3

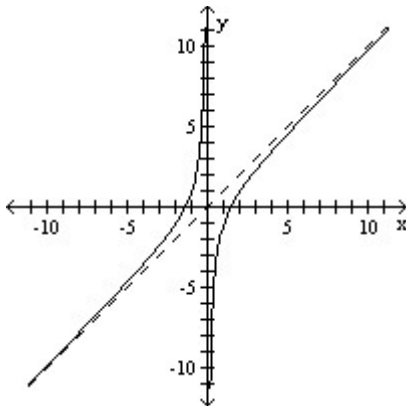
x = 0, x = 9

x = 9, x = -11

x = 0, x = -3, x = 3

Question 20 **5 points** Save

Use the graph to find the vertical asymptotes, if any, of the function.



y = 0

x = 0, y = 0

x = 0

none

Save Submit