

M305G MidTerm

Show ALL Work for CREDIT

Only front sides will be graded

name _____

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SSno. _____

1. SIMPLIFY

A. $\frac{(-ab^{-2})^3}{(a^{-1}b)^2}$

B. $\frac{w^3-1}{w^2-1}$

2. For $p(x) = x^2 + 7x - 16$

A. Find All Roots

B. Find the vertex

3. Determine the center and radius of the circle given by the equation $x^2 + y^2 - 6x + 4y - 12 = 0$

4. Solve the inequality and use interval notation to write your answer

$$\frac{2}{x-3} - \frac{1}{x+2} > 0$$

5. Find the inverse function to $y = \frac{2x-1}{x-1}$.

6. Write your answers in the form $y = mx + b$

A. The equation of the line through $(4, 5)$ parallel to $2x + 3y - 15 = 0$

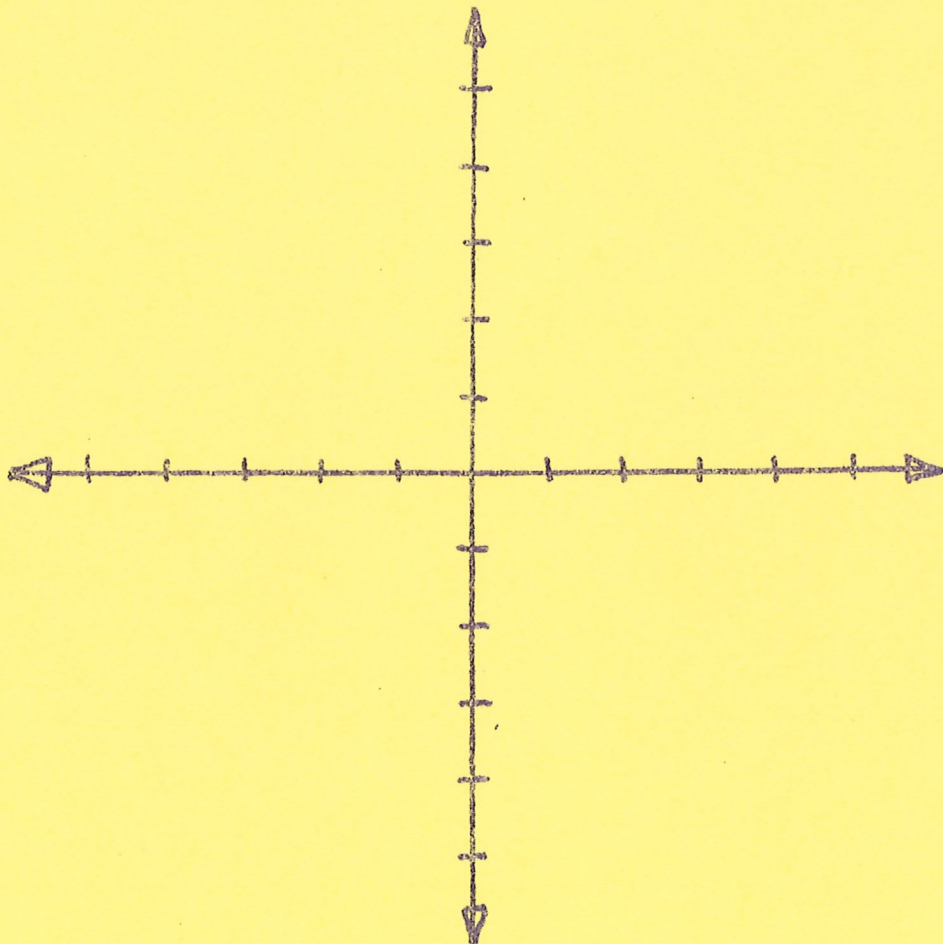
B. The equation of the line through $(4, 5)$ perpendicular to $2x + 3y - 15 = 0$

7. Find all of the points where the line $2y - x - 5 = 0$ intersects the circle $x^2 + y^2 - 4x - 2y - 20 = 0$

8. Completely factor $x^4 - 5x^3 - 4x^2 + 20x$

9. A riverboat travels 6 miles downstream in 20 minutes. The return trip, upstream, takes 30 minutes. Determine the speed of the river current and the speed of the boat in still water. Give your answers in "miles per hour" units.

10. GRAPH $y = \frac{x-1}{x-2}$. LABEL ALL HORT. & VERT. ASYM.



QUIZ 1

M305G

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1. Simplify, using no negative exponents in the final answer.

$$\frac{a^{-4}b^3}{(-a^2b^2)^{-3}}$$

2. Simplify, by removing all perfect squares from under the square root sign.

$$\sqrt{75a^4b}$$

In 3&4 factor completely

3 $9z^3w - 4zw^3$

4 $ax^3 - by^3 - bx^3 + ay^3$

QUIZ 2

M3056

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1 Solve the "absolute value eqn" $|-2x| = 9$

2. Solve the inequality and express the solution set with interval notation

$$4x^2 + 4x + 1 > x^2 - x + 3$$

3. Solve by completing the square. Simplify!

$$2t^2 = 1 - 3t$$

4. If the square of a number is decreased by 15, the result is equal to the number increased by 15. What is the number? (Find all solutions.)

Quiz 3 M305G

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1. Determine an equation of the line through the pair of points $(1, 3)$ and $(2, 1)$. Write your answer in the form $y = mx + b$.

2. Determine the center and the radius of the circle given by the equation $x^2 + y^2 - 2x + 12y - 12 = 0$.

3. Determine the domain of the function $f(x) = \sqrt{2x^2 - 2x - 12}$. Write your answer using interval notation.

4. Find all of the points where the line $3y - x - 10 = 0$ intersects the circle $x^2 + y^2 - 2x - 4y - 20 = 0$.

QUIZ 4 S88

M3056

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SS no. _____

1. Simplify

A. $\log_{16} 8$ B. $\log_3 \frac{1}{27}$ C. $(\sqrt[3]{t^2})^9$ DE. $\frac{a^2(a^3b^{\frac{1}{2}})^{-4}}{(a^3b)^2}$

2. Find the inverse function to $y = \frac{x-1}{x-2}$

3. A Rationalize the denominator and simplify

$$\frac{2-\sqrt{3}}{\sqrt{3}+2}$$

B. Solve for x using logarithms

$$\pi^{2x} = 3$$

4. A. Express $\log_b \sqrt{u/(wv)^3}$ in terms of $\log_b u$, $\log_b v$ & $\log_b w$.

B. Express $\log_b b^3 - 2\log_b b - \log_b (\frac{1}{b})$ as a single log. and simplify.

QUIZ 5 SBB

name _____

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1 Give the exact values for the triangle \Rightarrow

given $c = 10$ and $b = 6$

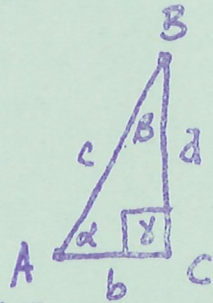
A. $\sin \alpha =$

B. $\tan \beta =$

C. $\sec \gamma =$

D. $\tan \alpha =$

E. $\sec \alpha =$



2 Give the exact values of

A. $\sin \theta$ if $\tan \theta = \sqrt{3}$ and θ is in the 3rd quadrant

B. $\tan \theta$ if $\cos \theta = -\frac{1}{2}$ and θ is in the 2nd quadrant

3 Solve for x , find all solutions

$$\log_5 x + \log_5 (x - 24) = 2$$

4 $y = f(x) = Ae^{kx}$ passes through the points $(3, 6)$ and $(9, 54)$. Find A , k and $f(12)$.

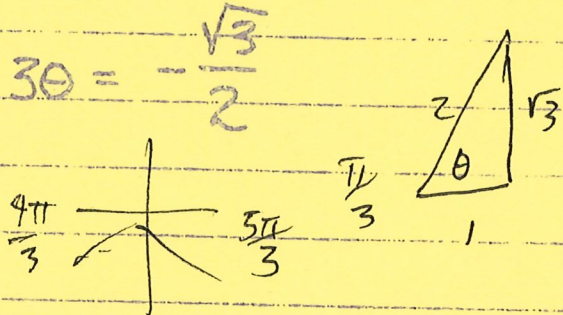
QUIZ 6 SBB
M305G

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1. Find all solutions to $\sin 3\theta = -\frac{\sqrt{3}}{2}$



2. Use the half angle formula to find $\cos 22.5^\circ = \cos \frac{\pi}{8}$. Simplify

3. Prove the identity $\sin 2x \tan x = 2 \sin^2 x$

4. Prove the identity $\cos \alpha - \sec \alpha = -\sin \alpha \tan \alpha$

QUIZ 1

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1. Simplify, using no negative exponents in the final answer.

$$\frac{x^{-3}y^4}{(-x^2y^2)^{-3}}$$

2. Simplify, by removing all perfect squares from under the square root sign.

$$\sqrt{72xy^4}$$

In 3 & 4 factor completely

3. $4u^3v - 9uv^3$

4. $ax^3 - by^3 - bx^3 + ay^3$

QUIZ 2

M3056

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1 Solve the "absolute value eqn" $|-3x| = 8$

2 Solve the inequality and express the solution set with interval notation.

$$4x^2 + 2x + 1 > x^2 + x + 3$$

3 Solve by completing the square. Simplify!

$$3u^2 - u = 1$$

4 If the square of a number is decreased by 15, the result is equal to the number increased by 5. What is the number? (Find all solutions.)

Quiz 3 M305G

name _____

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1. Determine an equation of the line through the pair of points $(1, 2)$ and $(3, 1)$. Write your answer in the form $y = mx + b$.

2. Determine the center and the radius of the circle given by the equation $x^2 + y^2 + 12x - 2y + 1 = 0$.

3. Determine the domain of the function $f(x) = \sqrt{3x^2 - 3x - 18}$. Write your answer using interval notation.

4. Find all of the points where the line $2y - x - 5 = 0$ intersects the circle $x^2 + y^2 - 4x - 2y - 20 = 0$.

QUIZ 4 S88

name _____

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1 Simplify

A. $\log_{27} 9$

B. $\log_2 \frac{1}{16}$

C. $\left(\sqrt[3]{\sqrt{u^3}}\right)^9$

DE. $\frac{x^2(x^3y^{\frac{1}{2}})^{-4}}{(x^3y)^2}$

2 Find the inverse function to $y = \frac{2x-1}{x-1}$

3 A Rationalize the denominator and simplify

$$\frac{\sqrt{3}+2}{2-\sqrt{3}}$$

B Solve for x using logarithms

$$2\pi^x = 6$$

4 A. Express $\log_b \sqrt{x/(yz)^3}$ in terms of $\log_b x$, $\log_b y$ & $\log_b z$

B. Express $2\log_b b + \log_b b^3 - \log_b \left(\frac{1}{b}\right)$ as a single \log_b and simplify

QUIZ 5 SBB

M 3056

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1. Give the exact values for the triangle \Rightarrow

Given $c = 13$ and $b = 5$

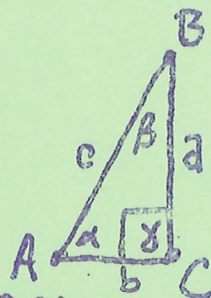
A. $\sin \alpha =$

B. $\tan \beta =$

C. $\sec \gamma =$

D. $\tan \alpha =$

E. $\sec \alpha =$



2. Give the exact values of

A. $\tan \theta$ if $\cos \theta = -\frac{1}{2}$ and θ is in the 2nd quadrant

B. $\sin \theta$ if $\tan \theta = \sqrt{3}$ and θ is in the 3rd quadrant

3. Solve for x , find all solutions

$$\log_6 x + \log_6 (x - 35) = 2$$

4. $y = f(x) = Ae^{kx}$ passes through the points $(3, 20)$ and $(9, 80)$. Find A , k and $f(12)$.

QUIZ 6 SOB

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1. Find all solutions to $\cos 3\theta = -\frac{\sqrt{3}}{2}$

2. Use the half angle formula to find
 $\sin 22.5^\circ = \sin \frac{\pi}{8}$. Simplify

3. Prove the identity $\cos 2x + \sin^2 x = \frac{\cos x}{\sec x}$

4. Prove the identity $\sin \alpha - \csc \alpha = -\cos \alpha \cot \alpha$

M305G FINAL SEB

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use the back sides for scratch paper

1. Simplify

A. $\log_{16} 8$

B. $\log_{\frac{1}{4}} \frac{1}{16}$

C. $\sin\left(\frac{13\pi}{3}\right)$

2. Determine the center and radius of the circle given by the equation $x^2 + y^2 - 6x + 8y - 39 = 0$

3. Find the inverse function to $y = \frac{3x - 6}{2x + 1}$

4. Find A. $\arctan(-\sqrt{3})$ B. $\arccos\left(-\frac{1}{2}\right)$

5. Solve for x A. $3^x = \pi$ B. $\log_x 81 = \frac{4}{3}$

6. Find the equation of the line through (4,5) which is perpendicular to the line through (1,4) and (4,1). Write your answer in the form $y = mx + b$

7. Find all solutions to $\sin 4\theta = -\frac{1}{2}$

8. Solve the inequality. Write your answer using interval notation $4x^2 + 2x + 1 > x^2 + x + 3$

9. Express $\ln \sqrt[4]{x^3 \left(\frac{y}{z^2}\right)^5}$ in terms of $\ln x$, $\ln y$ and $\ln z$.

10. Find $\sin(2 \arctan \sqrt{3})$

Completely factor $x^3 - 5x^2 + 8x - 4$

12. Find all of the points where the line $x - y - 1 = 0$ intersects the circle $x^2 + y^2 + 4x - 2y - 5 = 0$.

13. Use $\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$ to find $\sin 15^\circ = \sin \frac{\pi}{12}$

14. Rewrite $y = \sqrt{3} \sin t + \cos t$ in the form $y = a \sin(t - c)$
[Hint use equation in #13]

15. Graph $y = 5 \sin\left(2x + \frac{\pi}{4}\right)$

16. Find all solutions for x $\log_4 x + \log_4 (x-15) = 2$

17. Prove the identity $\csc \theta - \cot \theta = \frac{1}{\csc \theta + \cot \theta}$

18. $y = f(x) = Ae^{kx}$ passes through the points $(3, 6)$ and $(9, 54)$. Find A , k and $f(12)$.

19. When a walker and a runner start together on a quarter mile track and go in the same direction, the runner passes the walker after 3 minutes. When they start together and go in opposite directions they meet after one minute. Determine the rate of each in miles per hour.

20. Graph $y = \frac{3x-6}{2x+1}$. LABEL ALL HORIZ & VERT ASYM

SEC	PROBLEM	SEC	PROBLEMS
HW1 1	4, 10, 14, 30-40, 46-78, 84-85	2	1-20, 30-60, 76-80
HW2 3	1, 2, 7-14, 20- 30 , 40-44, 52	4	1-4, 16-24, 34-37, 43-44, 52, 53, 84, 85, 99, 100
HW3 5	1-4, 18-25, 37-44, 52, 53	6	8-23, 37, 38
7	1, 4, 13-14, 20-27, 32-35, 44-49, ⁶²⁻⁶⁵	8	5-8, 17-20, 29-32, 39-40, 43-48, 57, 58
HW4 9	9-10, 16-25, 29-33, 36-39, 49, 50	10	1, 12-17, 25-28, 35-36, 45-46, 39, 40
HW5 11	6-20, 35-38, 49-50, 53-54	12	1, 4, 7-16, 28-33, 37-40, 43-44, 53
13	6-9, 17-20, 25-28, 38 avoid synthetic division!	14	1-6
HW6 15	6-13, 18-28	16	1, 2, 7-18, 28-31, 37-39
17	1-3, 16, 17, 32, 33	18	1-4, 21-24, 49, 50, 52, 53, 60-67, 76
HW7 19	4-10, 15-16, 21-22	20 21	17-29, 42-65, 89-90, 102-106
HW8 22	1, 4, 7-15, 19, 20, 23	23	11-26, 35-38, 46, 47, 52, 53
HW9 24	7-18, 25, 26, 36-45, 49	25	1, 15-25, 31, 37
HW10 26	1, 4, 10, 11, 20-23, 28-29	27	1-3, 13-16, 21-24, 31-33, 38-40
HW11 28	1-4 , 16-20, 26-29, 32-34, 37-42	29	1-2, 15-19, 32-33, 45-46, 61-64, 76-81
HW12 30	3-4, 9-10, 24-26, 30-34, 38, 41, 43-45	31	1-6, 18-23, 39-45
32	2-5, 10-12, 22-30, 37, 44, 47	33	1-4, 10-18, 28-31
HW13 34	none	35	1-4, 11-14, 21-24, 31-34, 41-44, 51-54
HW14 36	1, 4, 7, 16-21, 29-32	37	8-12, 19-23, 27
38	1-3, 13-17, 25, 26, 34-36	39	1-6, 23-30, 43, 44, 46-49, 61