

INTEGRATED MATH 2 FINAL EXAM REVIEW MODULES 8-19

Answer each question completely. You must show your work.

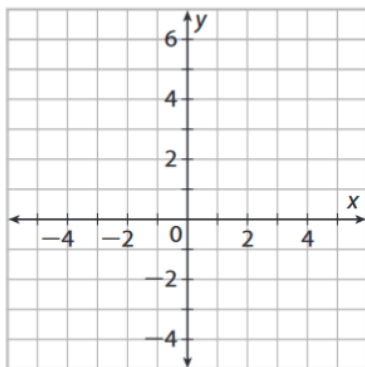
1. What is the end behavior of $f(x) = x^4 + 2x^3 - x$?

2. Based on the discriminant, how many real solutions does $y = -16x^2 + 4x + 13$ have?

3. What are the solutions to the equation $x^2 - 5x + 20 = 0$?

4. What are the solutions to $x^2 + 2x = -8$?

5. Graph the equation $y = 2(4)^x$ below?



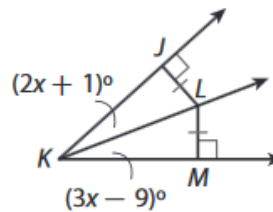
6. The graph of a quadratic function has a vertex at (1, 2) and opens upward. Which of the following statements is NOT true about the graph of the quadratic function?

- A. Part of the graph is in Quadrant I.
- B. The point (-1, -1) could be on the graph.
- C. The point (3, 6) could be on the graph.
- D. The graph will have no y-intercepts.

7. Evaluate $(-13 + 7i) - (17 - 12i)$.

8. Factor the polynomial $x^2 - 4x - 45$.

9. What value of x makes \overline{KL} the angle bisector of $\angle JKM$?

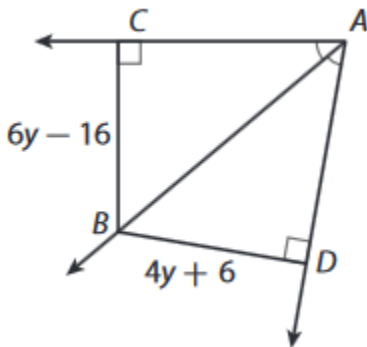


10. Identify the false statement about angle relationships when two parallel lines are cut by a transversal.

- A. Alternate Interior Angles are congruent.
- B. Corresponding Angles are supplementary.
- C. Same Side Interior Angles are supplementary.
- D. Vertical Angles are congruent.

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11. What is the length of \overline{BD} ?



12. Which of the following is not true for all parallelograms?

- A. Opposite angles are congruent.
- B. Consecutive angles are supplementary.
- C. Diagonals are perpendicular.
- D. Opposite sides are parallel.

13. State the domain and range of the function $y = x^2 + 3$.

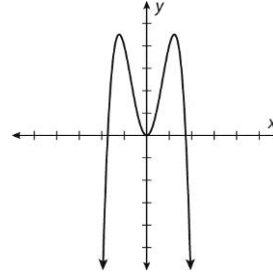
14. What type of graph grows the fastest?

- A. Linear
- B. Quadratic
- C. Exponential
- D. Square Root

15. Solve by factoring $x^2 - 15x = -36$. What are the solutions?

16. Factor $81x^2 - 121$?

17. Determine whether the function is even or odd degree, and positive or negative leading coefficient.



18. What is the center of the circle below?
 $(x - 5)^2 + (x + 3)^2 = r^2$

19. What is the vertex of the parabola below?

A. $y = (x - 4)^2 - 7$

20. What is the sum of the measures of the interior angles of a octagon?

21. A park has two hiking trails. One trail can be modeled by the equation $y = 2x + 3$. The second trail can be modeled by $y = -(x - 1)^2 + 5$. Determine if the paths intersect. If they do find the points of intersection

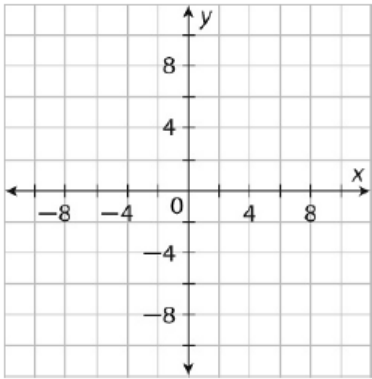
22. Evaluate the expression $(3 - 4i)(-6 + 8i)$.

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23. Write the inverse of the function $f(x) = \frac{2x}{5} - 3$

24. DO NOT DO What is the equation of a parabola with a vertex at $(1, 0)$, a focus at $(-2, 0)$, and a directrix $x = 4$.

25. Sketch the graph of the function $f(x) = 2\sqrt{x+2}$.



26. Factor the polynomial $9x^2 - 64$ completely.

27. DO NOT DO Is an exponential function a good model for each set of data?

A.

x	-2	-1	0	1	2
y	1	2	4	8	16

Yes No

B.

x	0	8	16	24	32
y	1600	1254	983	770	604

Yes No

C.

x	1	2	3	4	5
y	8.5	5.2	3.9	4.6	7.9

Yes No

D.

x	0	3	6	9	12
y	2	2.52	3.17	4.00	5.04

Yes No

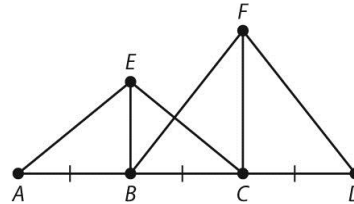
28. Factor $24x^3 - 44x^2 + 12x$

29. Consider a car with an initial cost of \$24,000 that is decreasing in value at a rate of 4.25% each year.

A. Write the exponential decay function described by this situation.

B. After how many years will the value of the car be \$15,000? Round your answer to the nearest year.

Use the figure for 30 – 32. \overline{EB} is the perpendicular bisector of \overline{AC} , and \overline{FC} is the perpendicular bisector of \overline{BD} .



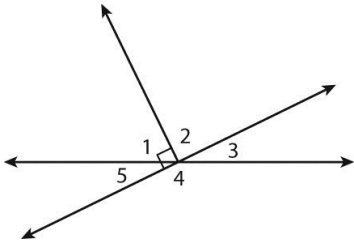
30. If $AE = 8\text{cm}$ and $FD = 12\text{cm}$, what is FB ?

31. If $AC = 10\text{cm}$, what is CD ?

32. The measures of a pair of vertical angles formed by line BF and line EC are $(x + 3)^\circ$ and $(2x - 7)^\circ$. Find the value of x .

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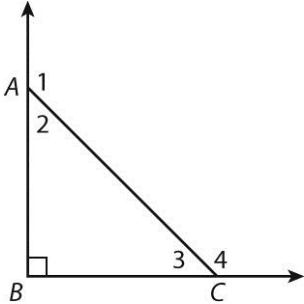
Use the figure for 33-34. In the figure, $m\angle 4 = 162^\circ$.



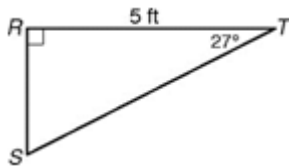
33. What is $m\angle 3$?

34. What is $m\angle 1$?

35. If $m\angle 1 = (3x + 8)^\circ$, what is $m\angle 3$ in terms of x ?



Use the figure for 36 – 37.



36. What is RS? Show your work.

37. What is ST? Show your work.

38. Figure $CDEF$ is similar to figure $WXYZ$. Select True or False for each proportion.

A. $\frac{CD}{WX} = \frac{EF}{YZ}$ True False

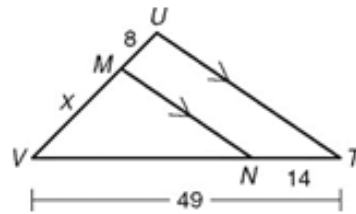
B. $\frac{CF}{WZ} = \frac{DE}{XY}$ True False

C. $\frac{EF}{YZ} = \frac{WX}{CD}$ True False

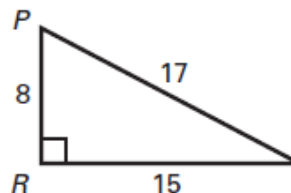
D. $\frac{DE}{XY} = \frac{FC}{ZW}$ True False

39. You have a 10-by-8 inch (length by width) photo of the school band that must be reduced to a length of 5.5 inches for the school yearbook. What is the width of the reduced photo?

40. What is the length of \overline{VM} ?

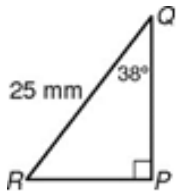


41. Find the measure of Angle P. Round to the nearest tenth of a degree.

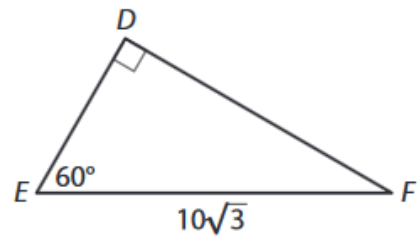


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42. Find the length of RP to the nearest tenth of a meter.



43. Use the special triangle relationships to find the length of DE and DF.



44. Solve $7x^2 - 19x - 36 = 0$ by factoring.

45. Solve $4x^2 - 17x - 15 = 0$ by using the quadratic formula.

46-50. Module 19 Circles, Arcs, and Angles.