NAME KEY DATE CLASS

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 $f(x) = x^4 + 2x^3 - x$?

As $x \to \infty$, $f(x) \to \infty$
$x \to -\infty$, $f(x) \to \infty$

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

2 real solutions

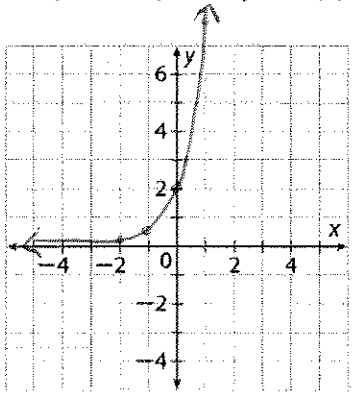
3. What are the solutions to the equation $x^2 - 5x + 20 = 0$?

$x = \frac{5 \pm i\sqrt{55}}{2}$

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

$x = -1 \pm i\sqrt{7}$

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 ~~are~~ 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.

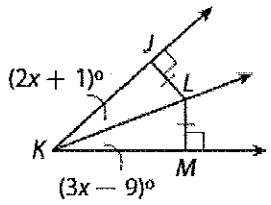
7. Evaluate $(-13 + 7i) - (17 - 12i)$.

$-30 + 19i$

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

$(x - 9)(x + 5)$

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



$x = 10$

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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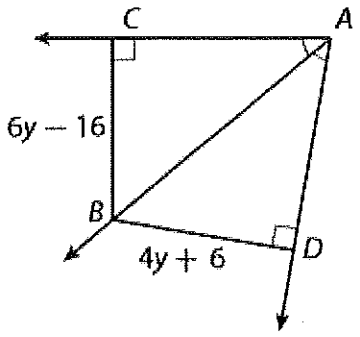
11. What is the length of $\overline{BD}$? $50 = BD$



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 $y = x^2 + 3$.

D: $(-\infty, +\infty)$
R: $[3, +\infty)$

14. What type of graph grows the fastest?

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

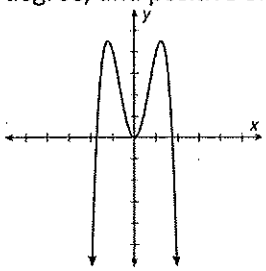
15. Solve by factoring $x^2 - 15x = -36$. What are the solutions?

$x = 3, \ x = 12$

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

$(9x + 11)(9x - 11)$

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



Even, negative

18. What is the center of the circle below?

$(x - 5)^2 + (x + 3)^2 = r^2$

$(5, -3)$

19. What is the vertex of the parabola below?

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

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

1080

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

A. $(1, 1)$	O Yes	O No
B. $(2, 1)$	O Yes	O No
C. $(3, 3)$	O Yes	O No
D. $(3, 4)$	O Yes	O No

Solutions are $(1, 5)$ and $(-1, 1)$

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

$14 + 48i$

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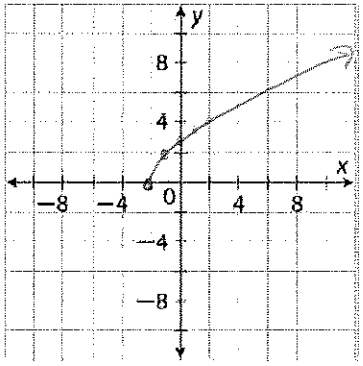
23. Write the inverse of the function $f(x) = \frac{2x}{5} - 3$

$f^{-1}(x) = \frac{5}{2}x + \frac{15}{2}$

24. What is the equation of a parabola with a vertex at $(1, 0)$, a focus at $(-2, 0)$, and a directrix $x = 4$.

SKIP

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



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

$(3x-8)(3x+8)$

27. Is an exponential function a good model for each set of data?

SKIP

A.

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

O Yes O No

B

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

O Yes O No

C

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

O Yes O No

D

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

O Yes O No

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

$4x(2x-3)(3x-1)$

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

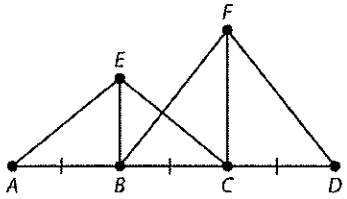
A. Write the exponential decay function described by this situation.

$y = 24{,}000(.9575)^t$

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

11 years

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 $AE = 8$cm and $FD = 12$ cm, what is FB?

12cm

31. If $AC = 10$cm, what is CD?

5cm

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

$X = 10$

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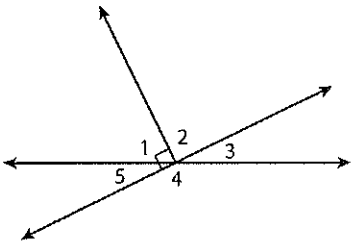
Use the figure for 33-34. In the figure, $m\angle 4 = 162°$.



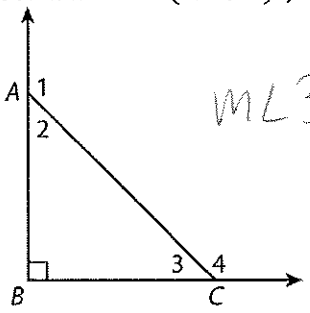
33. What is $m\angle 3$?

18°

34. What is $m\angle 1$?

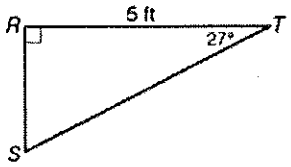
72°

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



$m\angle 3 = 3x - 82$

Use the figure for 36 – 37.



36. What is RS? Show your work.

RS = 2.5

37. What is ST? Show your work.

ST = 5.6

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

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

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

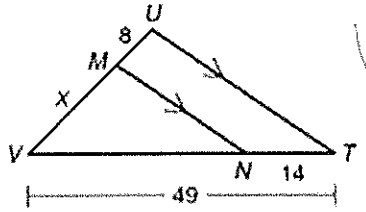
C. $\frac{EF}{YZ} = \frac{WX}{CD}$ O True O False

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

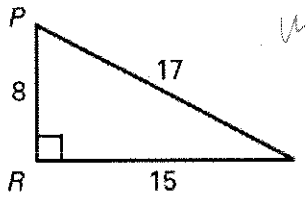
x = 4.4 in.

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



VM = 20

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



$m\angle P = 61.9°$

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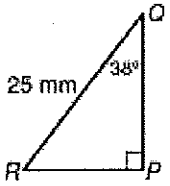
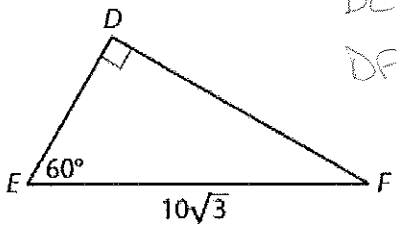
42. Find the length of RP to the nearest tenth of a meter.



$RP = 15.4$ mm

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



$DE = 5\sqrt{3}$

$DF = 15$

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

$x = 4, \quad x = -\frac{9}{7}$

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

$x = 5$

$x = -\frac{3}{4}$

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