

R. Ng

K	A	T	C
36	13	29	9

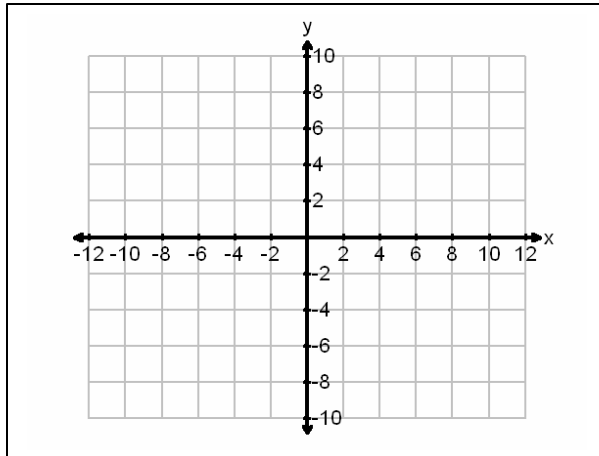
Sep 15, 2007

Grade 12 Assessment test

Please show all work on foolscap. Write your final answer on this sheet.

Ch 1 : functions and their transformations

1. Sketch $(x - 2)^2 + y^2 = 25$. [1 C]



Find the :

Domain : _____ [1 K]

Range : _____ [1 K]

Radius ; _____ [1 K]

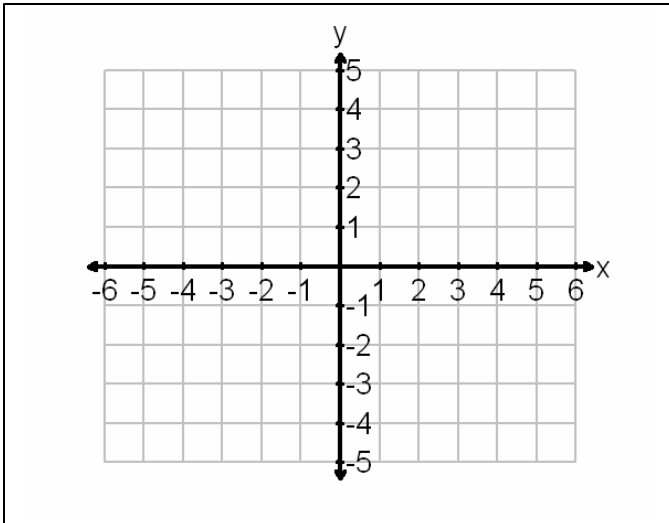
State a point on the graph.

_____ [1 K]

2. Describe how the following affect my original graph of $y = f(x)$ [6 A, 6 T]

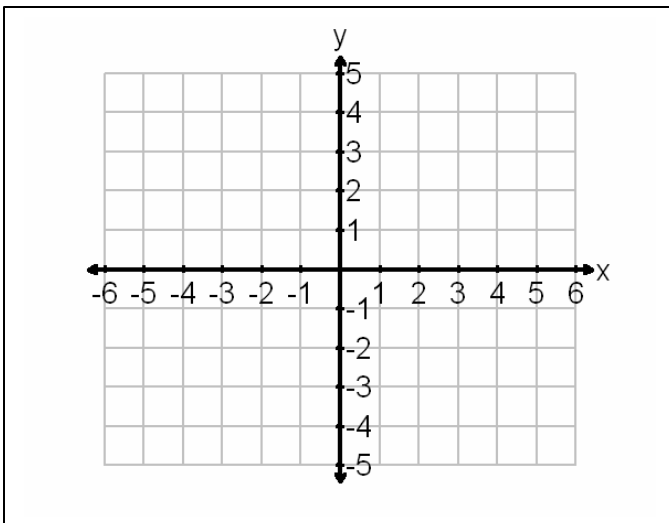
Transformation	What it does to $f(x)$
Example: $3 F(x) + 2$	Vertical stretch by factor of 3, up by 2
(A) $f(x-4)$	
(B) $f\left(\frac{1}{2}x\right) - 5$	
(C) $5 f(x)$	
(D) $- 3 f(x)$	
(E) $4 f(x - 1)$	
(F) $f\left(\frac{-3}{5} + x\right)$	

3. Sketch and label the graph. $y = -(x-1)^2 + 2$ [2 C]



- (A) state the vertex
 vertex = _____ [1 K]
- (B) the x-intercepts are
 x-int = _____ [2 K]
- (C) axis of symmetry _____ [1 K]
- (D) domain _____ [1 K]
- (E) range _____ [1 K]

3. Sketch $y = \frac{x-2}{x+3}$ and answer the following questions. [2 C]

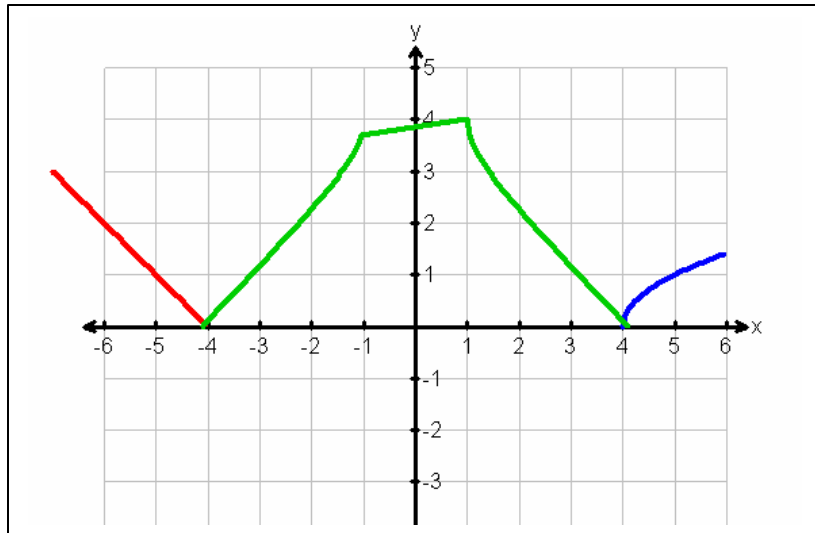


- (A) restrictions occur at _____ [1K]
- (B) find the inverse of $y = \frac{x-2}{x+3}$ [2 K]

4. Simplify $\frac{x}{x^2-4} - \frac{x^2+5x+6}{4x^2-36} =$. State restrictions [4 K, 1 T]

Ans: _____ ; restrictions = _____

5. Given the following graph. Draw $2 - f\left(\frac{1}{2}x\right)$. [3 A]



Ch 2: Quadratic equations

5. What is the length of the DIAGONAL of a square with area 40 cm^2
 The length of the diagonal is _____ [4 T]
6. A rectangular \square is 20 cm high and whose width is TWICE as long as its length.
 If the surface area of the \square is 1600 cm^2 , what is the volume of the \square ?
 The volume of the \square is _____ cm^3 [4 T]
7. Maria sells about 40 necklaces for \$ 8 each every week. She finds out that if she increased the price by \$ 0.50 per necklace, her sales would drop by 4 each week. How much should she sell each necklace for in order to maximize profits if 1 necklace only cost \$ 4 to make ? [4 A, 4 T]

She should sell each necklace for \$ _____ and she would make a maximum profit of \$ _____

8. Express $\frac{5i}{1-2i}$ in the form $a + bi$ [1 K]

Ans : $\frac{5i}{1-2i} = \underline{\hspace{2cm}}$

Ch 3: exponential equations

9. Simplify. $\frac{12(a^2b^{-3})^4}{(2a^{-3}b^2)^5} = \underline{\hspace{2cm}}$ [2 K]

10. Solve for x. $3(5^{x^2+3x}) = 0.12$ [2 K]

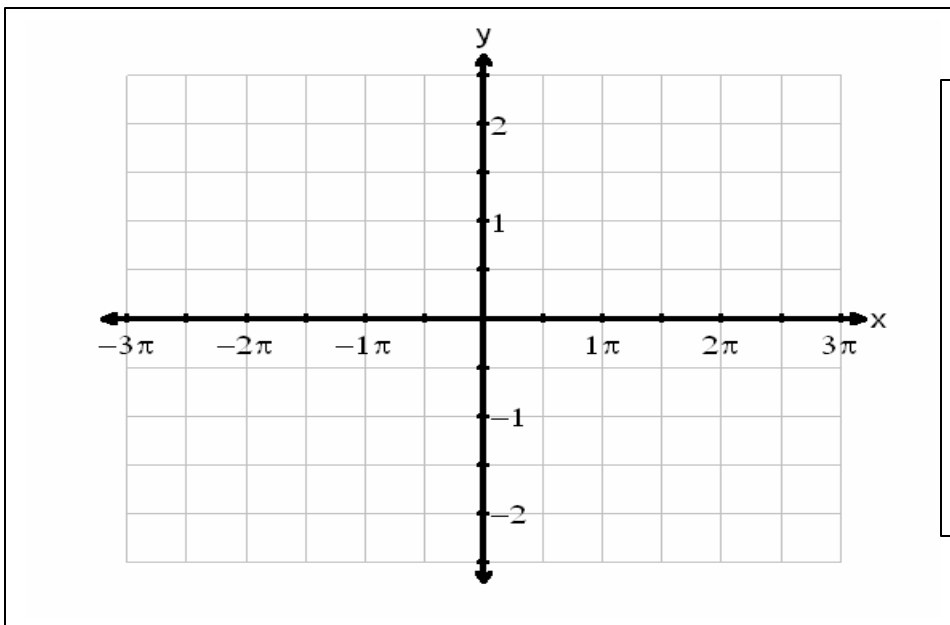
X = $\underline{\hspace{2cm}}$

11. Solve for x. $2x + \sqrt{x-12} = 8$ [2 K]

X = $\underline{\hspace{2cm}}$

Ch 4: trigonometric functions

12. Sketch the following. $y = 2\left(\cos\frac{p}{3}x\right) - 1$ from $-2p = x = 2p$ [2 C , 4 K]



Amplitude = $\underline{\hspace{2cm}}$
 Period = $\underline{\hspace{2cm}}$
 Phase shift = $\underline{\hspace{2cm}}$
 Vertical shift = $\underline{\hspace{2cm}}$

13. What is the period of $y = \sin 2x + \cos 3x$. Explain how you got your answer. [2 T, 2 C]

Period is _____ and is found by _____

14. State the exact value of $\sin\left(\frac{14p}{3}\right)$. [2 K]

$$\sin\left(\frac{14p}{3}\right) = \underline{\hspace{2cm}}$$

15. Solve for x between $0 < x < 2\pi$ for $\tan x = \frac{-1}{\sqrt{3}}$ [2 K]

$$X = \underline{\hspace{2cm}}$$

16. Solve for x for $6 \cos^2 x + 7 \cos x - 3 = 0$ for $[0, 2\pi]$ [4 K]

$$X = \underline{\hspace{2cm}}$$

17. Prove that $\sin B = \sqrt{\frac{1 - \cos 2B}{2}}$ [4 T]

18. Prove that $\cos^4 x - \sin^4 x = 1 - 2 \sin^2 x$ [2 T]

19. Prove that $\frac{\sin x}{1 - \cos x} = \frac{1 + \cos x}{\sin x}$ [2 T]