

Skills from previous math classes that you need to self-review for Math 43

From Algebra:

Equations of lines (slope-point form)
Graphs of linear equations
Quadratic functions
 Graphing
 Factoring
 Quadratic formula
 Completing the square
Rational expressions
 Add / subtract

From Geometry:

Areas
 Triangles / parallelograms

From Trigonometry:

Sine / cosine / tangent of special angles on unit circle
Inverse sine / cosine / tangent of special values
Pythagorean / reciprocal / quotient / negative angle / co-function identities
Double angle / sum & difference of angles identities
Trigonometric equations

From Precalculus:

Graphs of basic functions (domain, range, intercepts, asymptotes, long run behavior)
 Power $y = x^n$ (n could be positive or negative, even or odd or reciprocal of integer)
 Exponential $y = b^x$ (b could be greater than or less than 1)
 Logarithmic $y = \log_b x$ (b could be greater than or less than 1)
 Trigonometric $y = \sin x$, $y = \cos x$, $y = \tan x$, $y = \csc x$, $y = \sec x$ or $y = \cot x$
 Inverse trigonometric $y = \sin^{-1} x$, $y = \cos^{-1} x$ or $y = \tan^{-1} x$
Single step transformations of functions & graphs (relationship between algebraic & graphical transformations)
 Horizontal / vertical
 Shift / reflect / stretch & compress
Symmetry of functions & graphs (relationship between algebraic & graphical symmetry)
 Even / odd

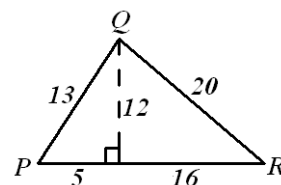
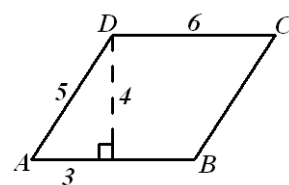
Unless stated otherwise, you must be able to solve these
without your calculator

- [1] Find the slope-point form of the equation of the line through the points $(-1, -3)$ and $(-6, 4)$.
- [2] Sketch the graph of the equation $2x - 3y = -12$ by finding the x - and y -intercepts.
- [3] Sketch $f(x) = x^2 - 6x - 16$ by finding the x - and y -intercepts and the vertex (without any additional points).
- [4] Solve $3x^2 - 2x = 9$.
- [5] Complete the square for $-2x^2 + 24x - 3$. **NOTE: This does NOT involve solving an equation.**

[6] Add and simplify $\frac{x-7}{x^2-4x+3} + \frac{x+7}{x^2-x-6}$.

[7] Find the area of the parallelogram $ABCD$ on the right.

[8] Find the area of the triangle PQR on the right.



[9] Fill in the following table with all entries (in radians) that have exact values. Also, identify the entries which do not exist.

$x =$	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{3}}{3}$	$-\frac{\sqrt{2}}{2}$	$-\sqrt{3}$	$-\frac{1}{2}$	-1	0	1	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{3}$	$\frac{\sqrt{3}}{2}$
$\tan^{-1} x =$													
$\cos^{-1} x =$													
$\sin^{-1} x =$													

- [10] Let $\theta = \frac{\pi}{6}$.
- [a] Find an angle with positive measure that is co-terminal with θ .
- [b] Find an angle with negative measure that is co-terminal with θ .
- [c] Find 3 angles between 0 and 2π that have θ as their reference angle.

- [11] State the following trigonometric identities.
- [a] the 3 Pythagorean identities that involve the 6 trigonometric functions
- [b] the co-function identities for each of the 6 trigonometric functions
- [c] the double angle identities for $\cos 2x$ (3 versions) and $\sin 2x$

[12] Simplify $\sin(x - \pi)$.

[13] Simplify $\cos(2\pi - x)$.

[14] Find all solutions of $1 + 2\cos x = 0$, where $0 \leq x \leq 2\pi$.

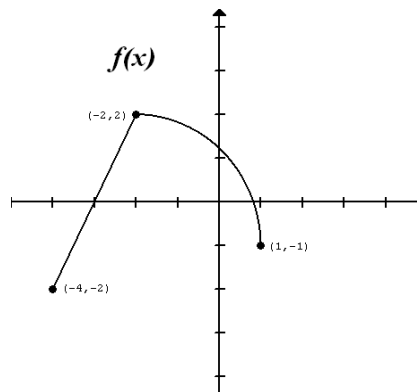
[15] Find all solutions of $\sin 2x = -\frac{\sqrt{3}}{2}$.

- [16] Sketch the general shape and position of the following graphs. Do not worry about specific x – and y – coordinates.

$y = x^5$	$y = x^{-4}$	$y = x^{\frac{1}{3}}$
$y = e^x$	$y = 0.5^x$	
$y = \ln x$	$y = \log_{0.4} x$	
$y = \cos x$	$y = \tan x$	$y = \csc x$
$y = \sin^{-1} x$	$y = \cos^{-1} x$	$y = \tan^{-1} x$

- [17] The graph of $f(x)$ is shown on the right. Sketch the following graphs.

$y = f(x) - 2$
 $y = f(x + 2)$
 $y = f(2x)$
 $y = 2f(x)$
 $y = f(-x)$
 $y = -f(x)$



- [18] Determine algebraically if $f(x) = x\sqrt{1+x^2}$ is symmetric about the y – axis, about the origin or neither.
- [19] Determine algebraically if $f(x) = \sin x - \cos x$ is even, odd or neither.