

Mathematics Support Capsules

BASIC ALGEBRA
0. DIAGNOSTIC

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Combine and simplify as much as possible the following expressions:

Questions

Answers

1) $\frac{1}{a+b} - \frac{2a}{a^2-b^2}$

1) _____

2) $\frac{x^2+2x+1}{2x^2} \div \frac{x+1}{x+2}$

2) _____

3) $-\frac{a+b}{ac+bd}$

3) _____

4) $\frac{(2a)^3}{a^5}$

4) _____

5) $(0.2a^2)^4$

5) _____

6) $\frac{8y^n}{-2y^{n-1}}$

6) _____

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ALGEBRA DIAGNOSTIC

7) $\sqrt[3]{-64y^{27}}$

7) _____

8) $\sqrt{a^2+b^2}$

8) _____

9) $(a+b)^3$

9) _____

10) $(\sqrt{x}+3\sqrt{y})(\sqrt{x}-\sqrt{y})$

10) _____

Solve the following equations for x :

11) $x^3 - x^2 - 6x = 0$

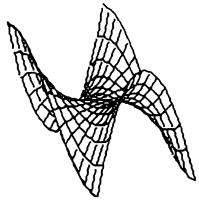
11) _____

12) $x^2 + 7x = -3$

12) _____

Now check your answers on the next page!

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Mathematics Support Capsules

BASIC TRIGONOMETRY
0. DIAGNOSTIC TEST

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Answer the following questions without calculators or trig tables. (Leave answers like 53π or $\sin 13^\circ$ as is.)

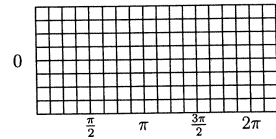
Questions

Answers

- 1) (a) $30^\circ =$ _____ radians
 (b) $\frac{3\pi}{2}$ radians = _____ degrees
 (c) $127^\circ =$ _____ radians

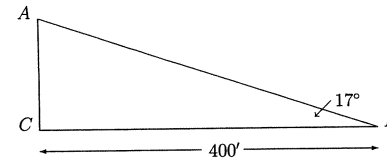
- 2) (a) $\sin 60^\circ =$ _____
 (b) $\tan\left(-\frac{3\pi}{4}\right) =$ _____
 (c) $\sec\left(\frac{\pi}{2}\right) =$ _____

- 3) Sketch the graph of $\sin x$.
 (Make your vertical scale as large as possible.)



- 4) Given $\tan \theta = \frac{6}{7}$, find $\sin \theta$ _____

- 5) Solve the following right triangle:
 (i.e., determine missing sides and angles.)



- 5) $\overline{AB} =$ _____
 $\overline{AC} =$ _____
 $\angle A =$ _____

- 6) Relate to $\sin \theta$ and $\cos \theta$

- (a) $\cos(-\theta) =$ _____
 (b) $\sin\left(\frac{\pi}{2} - \theta\right) =$ _____
 (c) $\sin 2\theta =$ _____

- 6) a. _____
 b. _____
 c. _____

- 7) Express in terms of \sin and \cos of A and B

$\sin(A - B) =$ _____

- 7) _____

- 8) $\frac{d}{dx}(\cos 3x + \tan x) =$ _____

- 8) _____

- 9) $\cos^{-1}(\sqrt{3}/2) =$ _____

- 9) _____

Check your answers on the next page!

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