

Answer Sheet

1	4	✓	17	$-7\sqrt{5}$	✓
2	6	✓	18	$-5\sqrt{3}$	✓
3	2	✓	19	$6\sqrt{3} - 3$	✓
4	5	✓	20	$\sqrt{25} + \sqrt{21} - \sqrt{10} - \sqrt{6}$	✓
5	-5	✓	21	$90 + 24\sqrt{10}$	✓
6	$2\sqrt[3]{5}$	✓	22	$\frac{5\sqrt{3}}{3}$	✓
7	$3\sqrt{5}$	✓	23	$\frac{\sqrt{3}}{3}$	✓
8	$5\sqrt{2}$	✓	24	$\frac{6\sqrt{x}}{x}$	✓
9	$3i$	✓	25	$\frac{-5(1+\sqrt{3})}{2}$	✓
10	$2\sqrt{6}i$	✓	26	$-\frac{9+4\sqrt{3}}{3}$	✓
11	$6i$	✓	27	$2+2i$	✓
12	$4\sqrt{5}i$	✓	28	$3-5i$	✓
13	$5xy\sqrt{2y}$	✓	29	12	✓
14	$3xy^3\sqrt{5xy}$	✓	30	$20 - 15i$	✓
15	$\sqrt{3} + \sqrt{3}$	✓	31	41	✓
16	$2\sqrt{x} + 2\sqrt{y}$	✓	32	$-7-11i$	✓

East Los Angeles College  
Department of Mathematics  
Math 125  
Test 2

Evaluate or simplify the following, every problem has a solution:

1.  $\sqrt{16}$

2.  $\sqrt{36}$

3.  $\sqrt[3]{8}$

4.  $\sqrt[3]{125}$

5.  $\sqrt[3]{-125}$

6.  $\sqrt[3]{40}$

7.  $\sqrt{45}$

8.  $\sqrt{50}$

9.  $\sqrt{-9}$

10.  $\sqrt{-24}$

11.  $\sqrt{-36}$

12.  $\sqrt{-80}$

Simplify the following radicals:

13.  $\sqrt{50x^2y^3}$

14.  $\sqrt{45x^3y^7}$

Add/Sub the following:

15.  $3\sqrt{5} - 2\sqrt{5} + \sqrt{3}$

16.  $6\sqrt{x} + 2\sqrt{y} - 4\sqrt{x}$

17.  $3\sqrt{45} - 8\sqrt{20}$

18.  $-4\sqrt{48} + 7\sqrt{27} - 5\sqrt{12}$

Multiply or Divide the following:

19.  $\sqrt{3}(6 - \sqrt{3})$

20.  $(\sqrt{7} - \sqrt{2})(\sqrt{5} + \sqrt{3})$

21.  $(3\sqrt{2} + 4\sqrt{5})^2$

22.  $\frac{5}{\sqrt{3}}$

23.  $\frac{\sqrt{2}}{\sqrt{6}}$

24.  $\frac{6}{\sqrt{x}}$

25.  $\frac{5}{1-\sqrt{3}}$

26.  $\frac{2+\sqrt{5}}{2-\sqrt{5}}$

Add or Sub the following complex numbers:

27.  $(4-i)+(-2+3i)$

28.  $(-2-3i)-(-5+2i)$

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Multiply or Divide the following:

29.  $-6i \cdot 2i$

30.  $-5i(3+4i)$

31.  $(4+5i)(4-5i)$

32.  $(3-5i)(1-2i)$

(30)

$$-s_i (3 + 4i)$$

$$-15i - 20 \begin{pmatrix} 2 \\ i \\ -1 \end{pmatrix}$$

$$-15i - 20(-1)$$

$$20 - 15i$$

(32)  $(3 - s_i)(1 - 2i)$

	1	-2i
3	3	-6i
-s_i	-s_i	10 \begin{pmatrix} 2 \\ i \\ -1 \end{pmatrix}

$$3 - 6i - s_i - 10$$

$$-7 - 11i$$

(31)  $(4 + s_i)(4 - s_i)$

$$16 - 2s_i \begin{pmatrix} 2 \\ i \\ -1 \end{pmatrix}$$

$$16 + 2s_i$$

$$(4)$$

math 125 Test 2

$$(1) \sqrt{16} = (4)$$

$$(2) \sqrt{36} = (6)$$

$$(3) \sqrt[3]{8} = (2)$$

$$(4) \sqrt[3]{125} = (5)$$

$$(5) \sqrt[3]{-125} = (-5)$$

$$(6) \sqrt[3]{40} = \sqrt[3]{8 \cdot 5}$$

$$= \sqrt[3]{8} \cdot \sqrt[3]{5}$$

$$(2 \sqrt[3]{5})$$

$$(7) \sqrt{45}$$

$$\sqrt{9 \cdot 5}$$

$$3\sqrt{5}$$

$$(3\sqrt{5})$$

$$(8) \sqrt{50}$$

$$\sqrt{25 \cdot 2}$$

$$5\sqrt{2}$$

$$(5\sqrt{2})$$

$$(9) \sqrt{-9} = \sqrt{-1 \cdot 9}$$

$$= \sqrt{-1} \sqrt{9}$$

$$= i \cdot 3$$

$$(3i)$$

$$(10) \sqrt{-24}$$

$$= \sqrt{-1 \cdot 24}$$

$$= \sqrt{-1 \cdot 4 \cdot 6}$$

$$= \sqrt{-1} \sqrt{4} \sqrt{6}$$

$$i \cdot 2 \sqrt{6}$$

$$(2\sqrt{6}i)$$

$$(11) \sqrt{-36} = \sqrt{-1 \cdot 36}$$

$$= \sqrt{-1} \sqrt{36}$$

$$(6i) \quad i \cdot 6$$

$$\begin{aligned}
 (12) \quad \sqrt{-80} &= \sqrt{-1 \cdot 80} = \sqrt{-1 \cdot 16 \cdot 5} \\
 &= \sqrt{-1} \sqrt{16} \sqrt{5} \\
 &= i \cdot 4 \cdot \sqrt{5} \quad (4\sqrt{5}i)
 \end{aligned}$$

$$\begin{aligned}
 (13) \quad \sqrt{50x^2y^3} \\
 &= \sqrt{(25) \cdot 2 \cdot (x^2) (y^2) \cdot y} \\
 &= \sqrt{(25) (x^2) (y^2)} \sqrt{2y} \\
 &= \sqrt{25} \sqrt{x^2} \sqrt{y^2} \sqrt{2y} \\
 &= 5xy \sqrt{2y}
 \end{aligned}$$

$$(16) \quad 6\sqrt{x} + 2\sqrt{y} - 4\sqrt{x}$$

$$(2\sqrt{x} + 2\sqrt{y})$$

$$(17) \quad 3\sqrt{45} - 8\sqrt{20}$$

$$3\sqrt{9 \cdot 5} - 8\sqrt{4 \cdot 5}$$

$$3 \cdot 3\sqrt{5} - 8 \cdot 2\sqrt{5}$$

$$9\sqrt{5} - 16\sqrt{5}$$

$$-7\sqrt{5}$$

$$\begin{aligned}
 (14) \quad \sqrt{45x^3y^7} \\
 &= \sqrt{(9) \cdot 5 (x^2) \cdot x \cdot (y^6) y} \\
 &= \sqrt{(9) (x^2) (y^6)} \sqrt{5xy} \\
 &= \sqrt{9} \sqrt{x^2} \sqrt{y^6} \sqrt{5xy} \\
 &= 3xy^3 \sqrt{5xy}
 \end{aligned}$$

$$(18) \quad -4\sqrt{147} + 7\sqrt{27} - 5\sqrt{12}$$

$$-4\sqrt{(16) \cdot 3} + 7\sqrt{(9) \cdot 3} - 5\sqrt{(4) \cdot 3}$$

$$-4 \cdot 4\sqrt{3} + 7 \cdot 3\sqrt{3} - 5 \cdot 2\sqrt{3}$$

$$-16\sqrt{3} + 21\sqrt{3} - 10\sqrt{3}$$

$$-5\sqrt{3}$$

$$(15) \quad 3\sqrt{5} - 2\sqrt{5} + \sqrt{5}$$

$$\sqrt{5} + \sqrt{5}$$

$$(19) \quad \sqrt{3} (6 - \sqrt{3})$$

$$6\sqrt{3} - \sqrt{41}$$

$$6\sqrt{3} - 3$$

$$(20) \quad (\sqrt{7} - \sqrt{2})(\sqrt{5} + \sqrt{3})$$

	$\sqrt{5}$	$\sqrt{3}$
$\sqrt{7}$	$\sqrt{35}$	$\sqrt{21}$
$-\sqrt{2}$	$-\sqrt{10}$	$-\sqrt{6}$

$$\sqrt{35} + \sqrt{21} - \sqrt{10} - \sqrt{6}$$

$$(21) \quad (3\sqrt{2} + 4\sqrt{5})^2 = (3\sqrt{2} + 4\sqrt{5})(3\sqrt{2} + 4\sqrt{5})$$

	$3\sqrt{2}$	$4\sqrt{5}$
$3\sqrt{2}$	$9(4)$	$12\sqrt{10}$
$4\sqrt{5}$	$12\sqrt{10}$	$16(25)$

$$9 \cdot 2 + 12\sqrt{10} + 12\sqrt{10} + 16 \cdot 5$$

$$18 + 24\sqrt{10} + 80$$

$$98 + 24\sqrt{10}$$

$$(22) \quad \frac{5}{\sqrt{3}} = \frac{5}{\sqrt{2}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$= \frac{5\sqrt{3}}{3}$$

$$(23) \quad \frac{\sqrt{2}}{\sqrt{6}} = \frac{\sqrt{2}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}}$$

$$= \frac{\sqrt{2}}{6} = \frac{\sqrt{4 \cdot 3}}{6}$$

$$= \frac{\sqrt{4}\sqrt{3}}{6} = \frac{2\sqrt{3}}{6} = \frac{\sqrt{3}}{3}$$

$$(24) \quad \frac{6}{\sqrt{x}} = \frac{6}{\sqrt{x}} \frac{\sqrt{x}}{\sqrt{x}} = \left( \frac{6\sqrt{x}}{x} \right)$$

$$(25) \quad \frac{5}{1-\sqrt{3}} = \frac{5}{1-\sqrt{3}} \cdot \frac{1+\sqrt{3}}{1+\sqrt{3}}$$

$$= \frac{5(1+\sqrt{3})}{1-3} = \frac{5(1+\sqrt{3})}{-2}$$

$$= -\frac{5(1+\sqrt{3})}{2}$$

$$(26) \quad \frac{2+\sqrt{5}}{2-\sqrt{5}} = \frac{(2+\sqrt{5})(2+\sqrt{5})}{(2-\sqrt{5})(2+\sqrt{5})}$$

$$= \frac{4 + 2\sqrt{5} + 2\sqrt{5} + \sqrt{25}}{2-5}$$

$$= \frac{4 + 4\sqrt{5} + 5}{2-5} = \frac{9+4\sqrt{5}}{-3}$$

$$= -\frac{9+4\sqrt{5}}{3}$$

$$(27) \quad (4-i) + (-2+3i)$$

$$2+2i$$

$$(29) \quad -6i-2i$$

$$(28) \quad (-2-3i) - (-5+2i)$$

$$-2-3i+5-2i$$

$$-12 \begin{pmatrix} 2 \\ -1 \end{pmatrix}$$

$$-12(-1)$$

$$3-5i$$

$$12$$