

Answer Sheet

1	5	✓	17	$7+2i$	=
2	$6i$	✓	18	$-7-2i$	=
3	-4	✓	19	$10-6i$	=
4	2	✓	20	$55-7i$	=
5	$5\sqrt{3}$	✓	21	$\frac{2}{17} + \frac{6}{17}i$	=
6	$2\sqrt[3]{4}$	✓	22	$\frac{7}{25} + \frac{1}{25}i$	=
7	$4x^2\sqrt{x}$	=	23	$\{6, -6\}$	=
8	$4x^4\sqrt{2}$	=	24	$\{3, -3\}$	=
9	$3\sqrt{3}$	✓	25	$\{12, 2\}$	- -
10	$12\sqrt{2} + 8$	=	26	$\{-8+7i, -8-7i\}$	- -
11	$4\sqrt{6} + 6$	=	27	$\{-\frac{5}{2} + \frac{\sqrt{41}}{2}, -\frac{5}{2} - \frac{\sqrt{41}}{2}\}$	=
12	$2-2\sqrt{5}+\sqrt{3}-\sqrt{15}$	=	28	$\{\frac{1}{3} + \frac{\sqrt{11}}{3}i, \frac{1}{3} - \frac{\sqrt{11}}{3}i\}$	=
13	$10+2\sqrt{21}$	=	29	$\{-3+2\sqrt{3}, -3-2\sqrt{3}\}$	=
14	$\frac{6\sqrt{5}}{5}$	✓	30	$\{-3 + \frac{\sqrt{26}}{2}, -3 - \frac{\sqrt{26}}{2}\}$	=
15	$\frac{14}{47} - \frac{2\sqrt{2}}{47}$	=	31	Solutions	
16	$\frac{2+3\sqrt{x}+x}{4-x}$	=	32	52 ✓	

East Los Angeles College
Department of Mathematics
Math 125
Test 2

Evaluate the following:

1. $\sqrt{25}$

2. $\sqrt{-36}$

3. $\sqrt[3]{-64}$

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

Simplify the following:

5. $\sqrt{75}$

6. $\sqrt[3]{32}$

7. $\sqrt{16x^5}$

8. $\sqrt{32x^8}$

Add/Sub the following:

9. $4\sqrt{12} - 5\sqrt{3}$

10. $6\sqrt{8} + 2\sqrt{16}$

Multiply or Divide the following:

11. $\sqrt{6}(4 + \sqrt{6})$

12. $(2 + \sqrt{3})(1 - \sqrt{5})$

13. $(\sqrt{7} + \sqrt{3})^2$

14. $\frac{6}{\sqrt{5}}$

15. $\frac{2}{7 + \sqrt{2}}$

16. $\frac{1 + \sqrt{x}}{2 - \sqrt{x}}$

Add or Sub the following complex numbers:

17. $(5 + 7i) + (2 - 5i)$

18. $(-4 + 2i) - (3 + 4i)$

Multiply or Divide the following:

19. $-2i(3 + 5i)$

20. $(7 - 3i)(7 + 2i)$

21. $\frac{2i}{4 + i}$

22. $\frac{1 + i}{4 + 3i}$

Solve for x by using the **Square Root Formula**.

23. $x^2 + 4 = 40$

24. $3x^2 - 1 = 26$

25. $(x - 7)^2 = 25$

26. $(x + 8)^2 = -49$

Solve for x by using the **Quadratic Formula**.

27. $x^2 + 5x - 4 = 0$

28. $3x^2 - 2x + 4 = 0$

Solve for x by **Completing the Square**.

29. $x^2 + 6x - 3 = 0$

30. $-2x^2 - 8x + 5 = 0$

31. What is your name?

math 125 Test 2

$$(1) \sqrt{25} = \underline{5}$$

$$(3) \sqrt[3]{-64} = \underline{-4}$$

$$(4) \sqrt[3]{8} = \underline{2}$$

$$(5) \sqrt{75} = \sqrt{25 \cdot 3}$$

$$= \sqrt{25} \sqrt{3}$$

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

$$(7) \sqrt{16x^5}$$

$$= \sqrt{(16)(x^4) \cdot x}$$

$$= \sqrt{16} \sqrt{x^4} \sqrt{x}$$

$$\underline{4x^2\sqrt{x}}$$

$$(9) 4\sqrt{12} - 5\sqrt{3}$$

$$4\sqrt{(4) \cdot 3} - 5\sqrt{3}$$

$$4\sqrt{4}\sqrt{3} - 5\sqrt{3}$$

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

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

$$\underline{3\sqrt{3}}$$

$$(2) \sqrt{-36}$$

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

$$= \sqrt{-1} \sqrt{36} \quad i \cdot 6$$

$$\underline{6i}$$

$$(6) \sqrt[3]{32}$$

$$\sqrt[3]{8 \cdot 4}$$

$$\sqrt[3]{8} \sqrt[3]{4}$$

$$\underline{2\sqrt[3]{4}}$$

$$(8) \sqrt{32x^9}$$

$$\sqrt{(16) \cdot 2 (x^8) \cdot x}$$

$$= \sqrt{16} \sqrt{x^8} \sqrt{2}$$

$$= \underline{4x^4\sqrt{2}}$$

$$(10) 6\sqrt{8} + 2\sqrt{16}$$

$$6\sqrt{(4) \cdot 2} + 2\sqrt{16}$$

$$6\sqrt{4} \cdot \sqrt{2} + 2\sqrt{16}$$

$$6 \cdot 2\sqrt{2} + 2 \cdot 4$$

$$\underline{12\sqrt{2} + 8}$$

$$(11) \sqrt{6} (4 + \sqrt{6})$$

$$4\sqrt{6} + \sqrt{36}$$

$$\boxed{4\sqrt{6} + 6}$$

$$(12) (2 + \sqrt{3})(1 - \sqrt{5})$$

	1	$-\sqrt{5}$
2	2	$-2\sqrt{5}$
$\sqrt{3}$	$\sqrt{3}$	$-\sqrt{15}$

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

$$(13) (\sqrt{7} + \sqrt{3})^2$$

$$(\sqrt{7} + \sqrt{3})(\sqrt{7} + \sqrt{3})$$

	$\sqrt{7}$	$\sqrt{3}$
$\sqrt{7}$	$\sqrt{49}$	$\sqrt{21}$
$\sqrt{3}$	$\sqrt{21}$	$\sqrt{9}$

$$\sqrt{49} + \sqrt{21} + \sqrt{21} + \sqrt{9}$$

$$7 + 2\sqrt{21} + 3$$

$$\boxed{10 + 2\sqrt{21}}$$

$$(14) \frac{6}{\sqrt{5}} = \frac{6}{\sqrt{5}} \frac{\sqrt{5}}{\sqrt{5}}$$

$$= \frac{6\sqrt{5}}{5}$$

$$(15) \frac{2}{(7 + \sqrt{2})(7 - \sqrt{2})}$$

$$\frac{14 - 2\sqrt{2}}{49 - 2}$$

$$\frac{14 - 2\sqrt{2}}{47}$$

$$\left| \frac{14}{47} - \frac{2\sqrt{2}}{47} \right|$$

$$(16) \frac{(1 + \sqrt{x})(2 + \sqrt{x})}{(2 - \sqrt{x})(2 + \sqrt{x})}$$

$$\frac{(1 + \sqrt{x})(2 + \sqrt{x})}{4 - x}$$

	2	$\sqrt{x}$
1	2	$\sqrt{x}$
$\sqrt{x}$	$2\sqrt{x}$	x

$$\frac{2 + 2\sqrt{x} + x}{4 - x}$$

$$(17) (5+7i) + (2-8i)$$

$$5+7i+2-8i$$

$$\underline{7-1i}$$

$$(18) (-4+2i) - (3+4i)$$

$$-4+2i-3-4i$$

$$\underline{-7-2i}$$

$$(19) -2i(3+8i)$$

$$-6i - 10 \cancel{i^2} - 1$$

$$-6i + 10$$

$$\underline{10-6i}$$

$$(20) (7-3i)(7+2i)$$

	7	2i
7	49	14i
-3i	-21i	-6i^2

$$49 - 21i + 14i - 6(-1)$$

$$49 - 7i + 6 \quad ; \quad \underline{55-7i}$$

$$(21) \frac{2i(4-i)}{(4+i)(4-i)}$$

$$\frac{8i - 2 \cancel{i^2} - 1}{4^2 + 1^2}$$

$$\frac{8i + 2}{16 + 1}$$

$$\frac{8i + 2}{17}$$

$$\frac{8}{17}i + \frac{2}{17}$$

$$\underline{\frac{2}{17} + \frac{8}{17}i}$$

$$(22) \frac{(1+i)(4-3i)}{(4+3i)(4-3i)}$$

$$\frac{(1+i)(4-3i)}{4^2 + 3^2}$$

$$\frac{7+i}{16+9}$$

$$\frac{7+i}{25}$$

$$\frac{4+i+3}{25} \quad \underline{7+i}$$

$$\textcircled{23} \quad \begin{array}{ccc} x^2 + 4 & = & 40 \\ -4 & -4 & \end{array}$$

$$x^2 = 36 \quad \text{SRF}$$

$$x = \pm \sqrt{36}$$

$$\boxed{x = \pm 6}$$

$$\textcircled{25} \quad (x-7)^2 = 25$$

$$x-7 = \pm \sqrt{25}$$

$$\begin{array}{ccc} x-7 & = & \pm 5 \\ +7 & +7 & \end{array}$$

$$x = 7 \pm 5$$

$$\textcircled{24} \quad \begin{array}{ccc} 3x^2 - 1 & = & 26 \\ +1 & +1 & \end{array}$$

$$\frac{3x^2}{3} = \frac{27}{3}$$

$$x^2 = 9$$

$$x = \pm \sqrt{9}$$

$$\boxed{x = \pm 3}$$

$$x = 7+5 \quad ; \quad x = 7-5$$

$$\boxed{x = 12 \quad ; \quad x = 2}$$

$$\textcircled{26} \quad (x+8)^2 = -49$$

$$\begin{array}{ccc} x+8 & = & \pm \sqrt{-49} \\ -8 & -8 & \end{array}$$

$$x = -8 \pm \sqrt{-49}$$

$$\sqrt{-1 \cdot 49}$$

$$1 \cdot \sqrt{49}$$

$$i \cdot 7$$

$$\boxed{x = -8 \pm 7i}$$

$$(27) \quad x^2 + 5x - 4 = 0$$

$$a = 1, b = 5, c = -4$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4 \cdot 1 \cdot (-4)}}{2 \cdot 1}$$

$$x = \frac{-5 \pm \sqrt{25 + 16}}{2}$$

$$x = \frac{-5 \pm \sqrt{41}}{2}$$

$$x = \frac{-5}{2} \pm \frac{\sqrt{41}}{2}$$

$$(28) \quad 3x^2 - 2x + 4 = 0$$

$$a = 3, b = -2, c = 4$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4 \cdot 3 \cdot 4}}{2 \cdot 3}$$

$$x = \frac{2 \pm \sqrt{4 - 48}}{6}$$

$$x = \frac{2 \pm 2\sqrt{11}i}{6}$$

$$x = \frac{2}{6} \pm \frac{2\sqrt{11}i}{6}$$

$$x = \frac{1}{3} \pm \frac{\sqrt{11}i}{3}$$

$$\text{note } \sqrt{4 - 48} = \sqrt{-44}$$

$$= \sqrt{-4 \cdot 11} = \sqrt{-4} \sqrt{11}$$

$$2i\sqrt{11}$$

$$(29) \quad x^2 + 6x - 3 = 0$$

$$(1) \quad \frac{6}{2} = (3) \quad (2) \quad 3^2 = [9]$$

$$\underbrace{x^2 + 6x + 9}_{f} - \underbrace{9 - 3}_{a} = 0$$

$$(x+3)^2 - 12 = 0$$

+12 +12

$$(x+3)^2 = 12$$

$$x+3 = \pm \sqrt{12} \quad \sqrt{4 \cdot 3}$$

$\sqrt{4} \sqrt{3}$
 $(2\sqrt{3})$

$$x+3 = \pm 2\sqrt{3}$$

-3 -3

$$|x = -3 \pm 2\sqrt{3}|$$

$$(30) \quad \underbrace{-2x^2 - 8x + 5}_{-2} = 0 \quad \underbrace{-2}_{-2}$$

$$\frac{-2x^2}{-2} - \frac{8x}{-2} + \frac{5}{-2} = 0$$

$$x^2 + 4x - \frac{5}{2} = 0$$

$$(1) \quad \frac{4}{2} = (2) \quad (2) \quad 2^2 = [4]$$

$$\underbrace{x^2 + 4x + 4}_{f} - \underbrace{4 - \frac{5}{2}}_{a} = 0$$

$$(x+2)^2 - 4 - \frac{5}{2} = 0$$

$$(work) \quad -4 \cdot \frac{2}{2} - \frac{5}{2}$$

$$-\frac{8}{2} - \frac{5}{2}$$

$$-\frac{13}{2}$$

$$(x+2)^2 - \frac{13}{2} = 0$$

$$+ \frac{13}{2} + \frac{13}{2}$$

$$(x+2)^2 = \frac{13}{2}$$

$$x+2 = \pm \sqrt{\frac{13}{2}}$$

note $\sqrt{\frac{13}{2}} = \frac{\sqrt{13}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{26}}{2}$

$$\frac{x+3}{-3} = \pm \frac{\sqrt{26}}{2} \quad ; \quad \boxed{x = -3 \pm \frac{\sqrt{26}}{2}}$$