

# Answer Sheet

|    |                                        |   |    |                                        |   |
|----|----------------------------------------|---|----|----------------------------------------|---|
| 1  | 6                                      | / | 16 | $\frac{6\sqrt{7}}{7}$                  | - |
| 2  | 7i                                     | / | 17 | $\frac{20}{13} - \frac{5\sqrt{3}}{13}$ | - |
| 3  | -3                                     | / | 18 | $-\frac{3}{53} - \frac{37}{53}i$       | - |
| 4  | 5                                      | - | 19 | $5 + 6i$                               | - |
| 5  | $5\sqrt{2}$                            | / | 20 | $-10 - 3i$                             | - |
| 6  | $2\sqrt[3]{2}$                         | - | 21 | $15 - 12i$                             | - |
| 7  | $2x\sqrt{x}$                           | / | 22 | $46 - 18i$                             | - |
| 8  | $2x\sqrt[3]{6}$                        | / | 23 | $5 + 12i$                              | - |
| 9  | $2xy^2\sqrt{5y}$                       | = | 24 | 17                                     | - |
| 10 | $2y^2\sqrt[3]{5x^2}$                   | = | 25 | $\{5, -5\}$                            | - |
| 11 | $8\sqrt{5} - 10\sqrt{3}$               | = | 26 | $\{\sqrt{7}, -\sqrt{7}\}$              | - |
| 12 | $30\sqrt{2} + 6$                       | = | 27 | $\{1, -15\}$                           | - |
| 13 | $2\sqrt{5} + 5$                        | = | 28 | $\{8+5i, 8-5i\}$                       | - |
| 14 | $3 - 3\sqrt{2} + \sqrt{5} - \sqrt{10}$ | = | 29 | $\{5+2\sqrt{5}, 5-2\sqrt{5}\}$         | - |
| 15 | $7 + 2\sqrt{10}$                       | = | 30 | $\{4+5i, 4-5i\}$                       | - |

SO ✓

**East Los Angeles College**  
**Department of Mathematics**  
**Math 125**  
**Test 2**

Evaluate the following:

1.  $\sqrt{36}$

2.  $\sqrt{-49}$

3.  $\sqrt[3]{-27}$

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

Simplify the following:

5.  $\sqrt{50}$

6.  $\sqrt[3]{16}$

7.  $\sqrt{4x^3}$

8.  $\sqrt{24x^6}$

9.  $\sqrt{20x^2y^5}$

10.  $\sqrt[3]{40x^2y^5}$

Add/Sub the following:

11.  $4\sqrt{20} - 5\sqrt{12}$

12.  $6\sqrt{50} + 2\sqrt{9}$

Multiply or Divide the following:

13.  $\sqrt{5}(2 + \sqrt{5})$

14.  $(3 + \sqrt{5})(1 - \sqrt{2})$

15.  $(\sqrt{5} + \sqrt{2})^2$

16.  $\frac{6}{\sqrt{7}}$

17.  $\frac{5}{4+\sqrt{3}}$

18.  $\frac{1-5i}{7+2i}$

Add or Sub the following complex numbers:

19.  $(2 + 11i) + (3 - 5i)$

20.  $(-5 + i) - (5 + 4i)$

Multiply or Divide the following:

21.  $-3i(4 + 5i)$

22.  $(6 - 5i)(6 + 2i)$

23.  $(3 + 2i)^2$

24.  $(1 + 4i)(1 - 4i)$

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

25.  $x^2 + 4 = 29$

26.  $4x^2 - 5 = 23$

27.  $(x + 7)^2 = 64$

28.  $(x - 8)^2 = -25$

29.  $(x - 5)^2 = 20$

30.  $-2(x - 4)^2 - 7 = 43$

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31. What is your name?

math 125 Test 2

$$(1) \sqrt{36} = \underline{6}$$

$$(2) \sqrt{-49} = \sqrt{-1 \cdot 49}$$

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

$$i \cdot 7 \quad \underline{7i}$$

$$(3) \sqrt[3]{-27} = \underline{-3}$$

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

$$(5) \sqrt{50} = \sqrt{25 \cdot 2}$$

$$(6) \sqrt[3]{16} = \sqrt[3]{8 \cdot 2}$$

$$= \sqrt{25} \sqrt{2}$$

$$= \sqrt[3]{8} \cdot \sqrt[3]{2}$$

$$\underline{5\sqrt{2}}$$

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

$$(7) \sqrt{4x^3}$$

$$(8) \sqrt{24x^6}$$

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

$$\sqrt{4 \cdot 6 \cdot x^6}$$

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

$$\sqrt{4} \sqrt{x^6} \sqrt{6}$$

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

$$\sqrt{4} \sqrt{x^6} \sqrt{6}$$

$$\underline{2x^3\sqrt{6}}$$

$$(9) \sqrt{20x^2y^5}$$

$$\sqrt{4 \cdot 5 \cdot x^2 \cdot y^4 \cdot y}$$

$$\underline{2xy^2\sqrt{5y}}$$

$$\sqrt{4} \sqrt{x^2} \sqrt{y^4} \sqrt{5y}$$

$$\sqrt{4} \sqrt{x^2} \sqrt{y^4} \sqrt{5y}$$

$$(10) \sqrt[3]{40x^2y^6}$$

$$\sqrt[3]{(8) \cdot 5 \cdot x^2 (y^6)}$$

$$\sqrt[3]{(8)(y^6) 5x^2}$$

$$\sqrt[3]{8} \sqrt[3]{y^6} \sqrt[3]{5x^2}$$

$$\sqrt{2y^2 \sqrt[3]{5x^2}}$$

$$(13) \sqrt{5}(2 + \sqrt{5})$$

$$2\sqrt{5} + \sqrt{5}\sqrt{5}$$

$$2\sqrt{5} + \sqrt{25}$$

$$\sqrt{2\sqrt{5} + 5}$$

$$(14) (3 + \sqrt{5})(1 - \sqrt{2})$$

$$(11) 4\sqrt{20} - 5\sqrt{12}$$

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

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

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

$$\sqrt{8\sqrt{5} - 10\sqrt{3}}$$

|            |            |              |
|------------|------------|--------------|
|            | 1          | $-\sqrt{2}$  |
| $\sqrt{5}$ | 3          | $-3\sqrt{2}$ |
|            | $\sqrt{5}$ | $-\sqrt{10}$ |

$$\sqrt{3 - 3\sqrt{2} + \sqrt{5} - \sqrt{10}}$$

$$(15) (\sqrt{5} + \sqrt{2})^2$$

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

$$(12) 6\sqrt{50} + 2\sqrt{9}$$

$$6\sqrt{(25) \cdot 2} + 2\sqrt{(9)}$$

$$6\sqrt{25}\sqrt{2} + 2 \cdot \sqrt{9}$$

$$6 \cdot 5 \cdot \sqrt{2} + 2 \cdot 3$$

$$\sqrt{30\sqrt{2} + 6}$$

|            |             |             |
|------------|-------------|-------------|
|            | $\sqrt{5}$  | $\sqrt{2}$  |
| $\sqrt{5}$ | $\sqrt{25}$ | $\sqrt{10}$ |
| $\sqrt{2}$ | $\sqrt{10}$ | $\sqrt{4}$  |

$$5 + 2\sqrt{10} + 2$$

$$\sqrt{7 + 2\sqrt{10}}$$

$$(16) \quad \frac{6}{\sqrt{7}} = \frac{6}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{6\sqrt{7}}{(\sqrt{7})^2} = \frac{6\sqrt{7}}{7}$$

$$(17) \quad \frac{S}{4+\sqrt{3}} = \frac{S(4-\sqrt{3})}{(4+\sqrt{3})(4-\sqrt{3})} = \frac{20-S\sqrt{3}}{16-3}$$

fo: 1

$$\frac{20-S\sqrt{3}}{13} \quad \left| \quad \frac{20-S\sqrt{3}}{13} \quad \right|$$

$$(18) \quad \frac{1-Si}{7+2i} = \frac{(1-Si)(7-2i)}{(7+2i)(7-2i)}$$

$$= \frac{(1-Si)(7-2i)}{49+4} \quad (\text{TOP})$$

(TOP)

|     |      |     |
|-----|------|-----|
|     | 7    | -2i |
| 1   | 7    | -2i |
| -Si | -3Si | 10i |

-1

$$7-2i-3Si-10$$

$$-3-37i$$

$$\frac{-3-37i}{53} \quad \left| \quad \frac{-3}{53} - \frac{37}{53}i \quad \right|$$

$$(19) (2+11i) + (3-5i)$$

$$2+11i+3-5i$$

$$\boxed{5+6i}$$

$$(20) (-5+i) - (5+4i)$$

$$-5+i-5-4i$$

$$\boxed{-10-3i}$$

$$(21) -3i(4+5i)$$

$$-12i - 15(i^2)$$

$$-12i - 15(-1)$$

$$-12i + 15$$

$$\boxed{15-12i}$$

$$(22) (6-5i)(6+2i)$$

|     |      |          |
|-----|------|----------|
|     | 6    | 2i       |
| 6   | 36   | 12i      |
| -5i | -30i | -10(i^2) |

$$36+12i-30i+10$$

$$\boxed{46-18i}$$

$$(23) (3+2i)^2$$

$$(3+2i)(3+2i)$$

|    |    |        |
|----|----|--------|
|    | 3  | 2i     |
| 3  | 9  | 6i     |
| 2i | 6i | 4(i^2) |

$$9+6i+6i-4$$

$$\boxed{5+12i}$$

$$(24) (1+4i)(1-4i)$$

|    |    |          |
|----|----|----------|
|    | 1  | -4i      |
| 1  | 1  | -4i      |
| 4i | 4i | -16(i^2) |

$$1-4i+4i+16$$

$$\boxed{17}$$

$$(25) x^2 + 4 = 29$$

$$x^2 = 25$$

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

$$x = \pm 5$$

$$\boxed{x=5, x=-5}$$

$$\textcircled{26} \quad \begin{array}{cc} 4x^2 - 5 = 23 \\ +5 \quad +5 \end{array}$$

$$\frac{4x^2}{4} = \frac{28}{4}$$

$$x^2 = 7$$

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

$$\boxed{x = \sqrt{7} ; x = -\sqrt{7}}$$

$$\textcircled{27} \quad (x+7)^2 = 64$$

$$x+7 = \pm \sqrt{64}$$

$$\begin{array}{cc} x+7 = \pm 8 \\ -7 \quad -7 \end{array}$$

$$x = -7 \pm 8$$

$$x = -7 + 8 ; x = -7 - 8$$

$$\boxed{x = 1} ; \boxed{x = -15}$$

$$\textcircled{28} \quad (x-8)^2 = -25$$

$$x-8 = \pm \sqrt{-25}$$

$$\text{note : } \sqrt{-25} = \sqrt{-1 \cdot 25} \\ = \sqrt{-1} \sqrt{25} \\ = i \cdot 5$$

$$\begin{array}{cc} x-8 = \pm 5i \\ +8 \quad +8 \end{array}$$

$$x = 8 \pm 5i$$

$$\boxed{x = 8 + 5i ; x = 8 - 5i}$$

$$\textcircled{29} \quad (x-5)^2 = 20$$

$$x-5 = \pm \sqrt{20}$$

$$\text{note } \sqrt{20} = \sqrt{(4) \cdot 5} \\ = \sqrt{4} \sqrt{5} \\ \textcircled{2\sqrt{5}}$$

$$\begin{array}{cc} x-5 = \pm 2\sqrt{5} \\ +5 \quad +5 \end{array}$$

$$x = 5 \pm 2\sqrt{5}$$

$$\boxed{x = 5 + 2\sqrt{5}} \\ \boxed{x = 5 - 2\sqrt{5}}$$

$$\textcircled{30} \quad \begin{array}{ccc} -2(x-4)^2 - 7 & = & 43 \\ +7 & & +7 \end{array}$$

$$-2(x-4)^2 = 50$$

$$\frac{-2(x-4)^2}{-2} = \frac{50}{-2}$$

$$(x-4)^2 = -25$$

$$x-4 = \pm\sqrt{-25}$$

note  $\sqrt{-25} = \sqrt{-1 \cdot 25}$

$$= \sqrt{-1} \sqrt{25}$$

$i \cdot 5$

$$\begin{array}{ccc} x-4 & = & \pm 5i \\ +4 & & +4 \end{array}$$

$$x = 4 \pm 5i$$

|              |
|--------------|
| $x = 4 + 5i$ |
| $x = 4 - 5i$ |