Answer Sheet

| | | | |
|---|---|---|---|
| 1 | $4$ ✓ | 15 | $-7\sqrt{5}$ ✓ |
| 2 | $6$ ✓ | 16 | $-5\sqrt{3}$ ✓ |
| 3 | $2$ ✓ | 17 | $6\sqrt{3}-3$ ✓ ✓ |
| 4 | $5$ ✓ | 18 | $\sqrt{35}+\sqrt{21}-\sqrt{10}-\sqrt{6}$ ✓ ✓ |
| 5 | $5\sqrt{2}$ ✓ | 19 | $98+24\sqrt{10}$ ✓ ✓ |
| 6 | $2\sqrt[3]{5}$ ✓ | 20 | $\frac{5\sqrt{3}}{3}$ ✓ |
| 7 | $3i$ ✓ | 21 | $-\frac{5(1+\sqrt{3})}{2}$ ✓ |
| 8 | $2\sqrt{6}\,i$ ✓ | 22 | $-9-4\sqrt{5}$ ✓ ✓ |
| 9 | $6i$ ✓ | 23 | $2+2i$ ✓ |
| 10 | $4\sqrt{5}\,i$ ✓ | 24 | $3-5i$ ✓ |
| 11 | $5xy\sqrt{2y}$ ✓ | 25 | $20-15i$ ✓ |
| 12 | $2y\sqrt[3]{7x^2y}$ ✓ | 26 | $-7-11i$ ✓ |
| 13 | $\sqrt{5}+\sqrt{3}$ ✓ ✓ | 27 | $5+12i$ ✓ |
| 14 | $2\sqrt{x}+2\sqrt{y}$ ✓ ✓ | 28 | $29$ ✓ |

~~28~~ ✓

~~33~~ ✓

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

Evaluate or simplify the following:

1. $\sqrt{16}$
2. $\sqrt{36}$
3. $\sqrt[3]{8}$
4. $\sqrt[3]{125}$
5. $\sqrt{50}$
6. $\sqrt[3]{40}$
7. $\sqrt{-9}$
8. $\sqrt{-24}$
9. $\sqrt{-36}$
10. $\sqrt{-80}$

Simplify the following radicals:

11. $\sqrt{50x^2y^3}$
12. $\sqrt[3]{56x^2y^4}$

Add/Sub the following:

13. $3\sqrt{5}-2\sqrt{5}+\sqrt{3}$
14. $6\sqrt{x}+2\sqrt{y}-4\sqrt{x}$
15. $3\sqrt{45}-8\sqrt{20}$
16. $-4\sqrt{48}+7\sqrt{27}-5\sqrt{12}$

Multiply or Divide the following:

17. $\sqrt{3}\left(6-\sqrt{3}\right)$
18. $\left(\sqrt{7}-\sqrt{2}\right)\left(\sqrt{5}+\sqrt{3}\right)$
19. $\left(3\sqrt{2}+4\sqrt{5}\right)^2$
20. $\dfrac{5}{\sqrt{3}}$
21. $\dfrac{5}{1-\sqrt{3}}$
22. $\dfrac{2+\sqrt{5}}{2-\sqrt{5}}$

Add or Sub the following complex numbers:

23. $(4-i)+(-2+3i)$

24. $(-2-3i)-(-5+2i)$

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Multiply or Divide the following:

25. $-5i(3+4i)$

26. $(3-5i)(1-2i)$

27. $(3+2i)^2$

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

math 125 Test 2

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

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

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

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

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

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

$= 5\sqrt{2}$

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

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

$2\sqrt[3]{5}$

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

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

$= i3$

$3i$

(8) $\sqrt{-24} = \sqrt{-1 \cdot 24}$

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

$= i\sqrt{4 \cdot 6}$

$i\sqrt{4}\sqrt{6}$

$2\sqrt{6}\,i$

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

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

$i \cdot 6$

$6i$

(10) $\sqrt{-80}$

$= \sqrt{-1 \cdot 80}$

$= \sqrt{-1}\sqrt{80}$

$= \sqrt{-1}\sqrt{16}\sqrt{5}$

$i \cdot 4\sqrt{5}$

$4\sqrt{5}\,i$

(11) $\sqrt{50x^2y^3}$

$= \sqrt{25 \cdot 2 \cdot x^2 \cdot y^2 \cdot y}$

$= \sqrt{25 \, x^2 \, y^2 \, 2y}$

$= \sqrt{25}\sqrt{x^2}\sqrt{y^2}\sqrt{2y}$

$\boxed{5xy\sqrt{2y}}$

(12) $\sqrt[3]{56x^2y^4} = \sqrt[3]{8 \cdot 7 \cdot x^2 \cdot y^3 \cdot y}$

$= \sqrt[3]{8 \, y^3} \; \sqrt[3]{7x^2y}$

$\boxed{2y\sqrt[3]{7x^2y}}$

(13) $3\sqrt{5} - 2\sqrt{5} + \sqrt{3}$

$\boxed{\sqrt{5} + \sqrt{3}}$

(14) $6\sqrt{x} + 2\sqrt{y} - 4\sqrt{x}$

$\boxed{2\sqrt{x} + 2\sqrt{y}}$

(15) $3\sqrt{45} - 8\sqrt{20}$

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

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

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

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

$\boxed{-7\sqrt{5}}$

(16) $-4\sqrt{48} + 7\sqrt{27} - 5\sqrt{12}$

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

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

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

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

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

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

(17) $\sqrt{3}(6-\sqrt{8})$

$6\sqrt{3}-\sqrt{8}\sqrt{3}$

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

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

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

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

(19) $(3\sqrt{2}+4\sqrt{5})^2$

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

| | $3\sqrt{2}$ | $4\sqrt{5}$ |
|---|---|---|
| $3\sqrt{2}$ | $9\sqrt{4}$ | $12\sqrt{10}$ |
| $4\sqrt{5}$ | $12\sqrt{10}$ | $16\sqrt{25}$ |

$9\sqrt{4}+12\sqrt{10}+12\sqrt{10}+16\sqrt{25}$

2 5

$9.2 + 12\sqrt{10} + 72\sqrt{10} + 16.5$

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

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

(20) $\frac{5}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{5\sqrt{3}}{3}}$

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

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

(22) $\left(\frac{2+\sqrt{5}}{2-\sqrt{5}}\right) \cdot \frac{(2+\sqrt{5})}{(2+\sqrt{5})}$

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

$\frac{4 + 4\sqrt{5} + 5}{-1}$ $\qquad$ $\frac{9 + 4\sqrt{5}}{-1}$

$\boxed{-9 - 4\sqrt{5}}$

(23) $(4-i)+(-2+3i)$

$4-i-2+3i$

$\boxed{2+2i}$

(24) $(-2-3i)-(-5+2i)$

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

$\boxed{3-5i}$

(25) $-5i(3+4i) = -15i-20(i^2)$

$i^2 = -1$

$= -15i+20$

$\boxed{20-15i}$

(26) $(3-5i)(1-2i)$

$3-6i-5i-10$

$\boxed{-7-11i}$

| | 1 | $-2i$ |
|---|---|---|
| 3 | 3 | $-6i$ |
| $-5i$ | $-5i$ | $10(i^2)=-1$ |

(27) $(3+2i)^2$

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

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

$9 + 6i + 6i - 4$

$\boxed{5+12i}$

(28) $(2+5i)(2-5i) = 4 - 10i + 10i + 25$

| | 2 | $-5i$ |
|---|---|---|
| 2 | 4 | $-10i$ |
| $5i$ | $10i$ | $-25(i^2)$ |

(29)