**Algebra 2 CP NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Semester 1 PRACTICE Exam DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ HR\_\_\_\_**

**You may use a calculator. Please show all work directly on this test. You may write on the test. GOOD LUCK!**

**THIS IS JUST PRACTICE – GIVE YOURSELF 45 MINUTES TO DO THE TEST – CHECK YOUR SCORE. Once 45 minutes is up, go back and complete the test and make sure every answer is right!**

|  |  |  |
| --- | --- | --- |
| 1. | Find the y-intercept of: $y=2x^{2}+8x-10$ | **Do Your Figuring Here** |
|  |  |  |
|  | **A.** | (0, 2) |
|  | **B.** | (0, -2) |
|  | **C.** | (0, 8) |
|  | **D.** | (0, -10) |
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| 2. | Find the Axis of Symmetry of: $y=2x^{2}+8x-10$  |  |
|  |  |  |
|  | **A.** | x = 2 |
|  | **B.** | x = -2 |
|  | **C.** | x = 8 |
|  | **D.** | x = -10 |
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| 3. | Which of the following is equivalent to: $\left(6-5i\right)\left(6+5i\right)$ |  |
|  |  |  |
|  | **A.** | $$61$$ |
|  | **B.** | $$36-25i$$ |
|  | **C.** | $$61-60i$$ |
|  | **D.** | $$61+60i$$ |
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| 4. | Which of the following is equivalent to: $\frac{5+\sqrt{2}}{\sqrt{3}}$ |  |
|  |  |  |
|  | **A.** | $$\frac{5+\sqrt{6}}{3}$$ |
|  | **B.** | $$\frac{5\sqrt{3}+\sqrt{6}}{3}$$ |
|  | **C.** | $$\frac{5+\sqrt{6}}{9}$$ |
|  | **D.** | $$\frac{\sqrt{10}+\sqrt{6}}{3}$$ |
|  |  |  |
|  |  |  **CONTINUE TO NEXT PAGE** |
|  |  | **Do Your Figuring Here** |
| 5. | Solve the following equation:  $-x^{2}-4x+6=0$ |  |
|  |  |  |
|  | **A.** | $$4\pm \sqrt{10}$$ |
|  | **B.** | $$-2\pm \sqrt{10}$$ |
|  | **C.** | $$4\pm \sqrt{2}$$ |
|  | **D.** | $$-2\pm \sqrt{2}$$ |
|  |  |  |
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| 6. | Which of the following expressions is equivalent to: $\left(-2x^{3}y^{-4}\right)^{2}\left(3x^{9}y^{3}\right)$  |  |
|  |  |  |
|  | **A.** | $$\frac{-12x^{18}}{y^{12}}$$ |
|  | **B.** | $$\frac{12x^{15}}{y^{12}}$$ |
|  | **C.** | $$\frac{12x^{15}}{y^{5}}$$ |
|  | **D.** | $$\frac{-6x^{15}}{y^{5}}$$ |
|  |  |  |
| 7. | Which of the following expressions is equivalent to: $\frac{-125a^{7}b^{-4}}{5a^{4}b^{-3}}$ |  |
|  |  |  |
|  | **A.** | $$-25a^{3}b$$ |
|  | **B.** | $$\frac{-25a^{3}}{b}$$ |
|  | **C.** | $$\frac{a^{3}}{625b}$$ |
|  | **D.** | $$\frac{a^{3}}{130b}$$ |
|  |  |  |
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| 8. | Which of the following expressions is equivalent to: $\left(x+2\right)\left(x-1\right)\left(x+3\right)$ |  |
|  |  |  |
|  | **A.** | $$x^{3}-6$$ |
|  | **B.** | $$x^{3}+3x^{2}-2x-6$$ |
|  | **C.** | $$x^{3}+4x^{2}+x-6$$ |
|  | **D.** | $x^{3}+2x^{2}-2x-6$ **CONTINUE TO NEXT PAGE** |
| 9. | Which graph has the following End Behavior: $$as x\rightarrow -\infty , f\left(x\right)\rightarrow -\infty $$$$as x\rightarrow \infty , f\left(x\right)\rightarrow \infty $$ |  **Do Your Figuring Here** |
|  |  |  |
|  | **A.** |  |
|  | **B.** |  |
|  | **C.** |  |
|  | **D.** |  |
|  |  |  |
| 10. | Identify one of the factors of: $2x^{4}-x^{2}-3$ |  |
|  |  |  |
|  | **A.** | $$\left(2x^{2}-3\right)$$ |
|  | **B.** | $$\left(2x^{2}-1\right)$$ |
|  | **C.** | $$\left(x^{2}-3\right)$$ |
|  | **D.** | $$\left(x^{2}-1\right)$$ |
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| 11. | Identify all of the factors of: $125x^{3}+1$ | **Do Your Figuring Here** |
|  |  |  |
|  | **A.** | $$\left(5x+1\right)^{3}$$ |
|  | **B.** | $$\left(5x^{3}+1\right)\left(5x^{6}-25x+1\right)$$ |
|  | **C.** | $$\left(5x+1\right)\left(25x^{2}-5x+1\right)$$ |
|  | **D.** | $$\left(5x-1\right)\left(5x^{2}+5x+1\right)$$ |
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| 12. | One factor of $x^{3}-5x^{2}-x+5$ is $\left(x-5\right).$Find the remaining factors. |  |
|  |  |  |
|  | **A.** | $$\left(x+2\right)\left(x-2\right)$$ |
|  | **B.** | $$\left(x-2\right)\left(x-2\right)$$ |
|  | **C.** | $$\left(x-1\right)\left(x-1\right)$$ |
|  | **D.** | $$\left(x-1\right)\left(x+1\right)$$ |
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| 13. | Identify all of the zeros of the following polynomial: $x^{3}+3x^{2}-2x-6$ |  |
|  |  |  |
|  | **A.** | $$3, \pm \sqrt{2}$$ |
|  | **B.** | $$-3, \pm \sqrt{2}$$ |
|  | **C.** | $$-3, \pm 2$$ |
|  | **D.** | $$3, \pm 2$$ |
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| 14.  | Based on the figure, determine the numberof real zeros. |  |
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|  | **A.** | 3 |
|  | **B.** | 4 |
|  | **C.** | 5 |
|  | **D.** | 6 |
|  |  |  |
|  |  | **CONTINUE TO NEXT PAGE** |
| 15. | Express in simplest radical form: $\left(81x^{2}\right)^{\frac{3}{4}}$ | **Do Your Figuring Here** |
|  |  |  |
|  | **A.** | $$27x^{2}\sqrt{x}$$ |
|  | **B.** | $$81\sqrt[3]{x^{2}}$$ |
|  | **C.** | $$81x^{2}\sqrt{x}$$ |
|  | **D.** | $$27x\sqrt{x}$$ |
|  |  |  |
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| 16. | Express in simplest radical form: $\frac{a^{\frac{-2}{3}}}{a^{\frac{-7}{3}}}$ |  |
|  |  |  |
|  | **A.** | $$a \sqrt[3]{a^{2}}$$ |
|  | **B.** | $$a \sqrt[3]{a}$$ |
|  | **C.** | $$a^{2} \sqrt[3]{a^{2}}$$ |
|  | **D.** | $$a^{2} \sqrt[3]{a}$$ |
|  |  |  |
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| 17. | Which of the following expressions is equivalent to: $2\sqrt{18}-\sqrt{2}+\sqrt{24}$ |  |
|  |  |  |
|  | **A.** | $$2\sqrt{10}$$ |
|  | **B.** | $$7\sqrt{8}$$ |
|  | **C.** | $$5\sqrt{2}+2\sqrt{6}$$ |
|  | **D.** |  $7\sqrt{2}$ |
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| 18.  | Which of the following expressions is equivalent to: $-2 \sqrt[3]{5x^{7} }∙4 \sqrt[3]{2x^{2}}$ |  |
|  |  |  |
|  | **A.** | $$-8x^{3} \sqrt[3]{10}$$ |
|  | **B.** | $$-8x^{4} \sqrt[3]{10x}$$ |
|  | **C.** | $-8x^{4} \sqrt[3]{10x^{2}}$  |
|  | **D.** | $$-8x^{3} \sqrt[3]{10x}$$ |
|  |  |  |
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| 19. | If $f\left(x\right)=2x+5 and g\left(x\right)=3x-6$ find $f\left(x\right)-g(x)$. | **Do Your Figuring Here** |
|  |  |  |
|  | **A.** | $$-x-1$$ |
|  | **B.** | $$-x+11$$ |
|  | **C.** | $$x-11$$ |
|  | **D.** | $$x-1$$ |
|  |  |  |
|  |  |  |
| 20. | Find the domain of: $f\left(x\right)=\frac{5x}{x+4}$ |  |
|  |  |  |
|  | **A** | $$x>4$$ |
|  | **B** | $$x,-4$$ |
|  | **C** |  $x\ne 0$ |
|  | **D** | $$x\ne -4$$ |
|  |  |  |
| 21. | A recent survey of 500 shows that 75% of students don’t study for their Algebra 2 CP Midterm. Find the interval likely to contain the exact percent. |  |
|  |  |  |
|  | **A.** | 70.5% - 79.5%  |
|  | **B.** | 63.5% - 86.5%  |
|  | **C.** 71.6% - 78.4% |  |
|  | **D.** 30% - 100% |  |
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**Algebra 2 CP NAME\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Semester 1 PRACTICE EXAM DATE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ HR\_\_\_\_**

**Part 2**

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| --- |
| For #1: Find the indicated values and graph the equation as well as the Axis of Symmetry. You must show all work for credit.  |
| **Graph the equation as well as the axis of symmetry**$$y=-2x^{2}-4x+1$$ |
| Vertex  |  |
| Axis of Symmetry \_\_\_\_\_\_\_\_\_\_  |
| Does this graph have a maximum or minimum? (circle one)   |
| Maximum/ Minimum Value \_\_\_\_\_\_\_\_\_\_\_  |
| **For #2, Find the Discriminant and Describe the Nature of the Zeros:** $3x^{2}-4x+9=0$ |
| Discriminant:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Nature of Zeros:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **For #3, Your University Book Store sells 200 freshmen math text books at $175 each. The store estimates that for every $5 decrease in price, the store will sell 10 more text books. Find the number of text books and cost of textbooks that will maximize profit, and the maximum profit.** |
| Cost of Book:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of Books Sold:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Max Profit:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **For #4, Find all of the zeros of the function. All work must be shown to receive full credit.** $f\left(x\right)=x^{4}+x^{3}+7x^{2}+9x-18$ |
| **x = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **For #5, if** $f\left(x\right)=3x+2x^{\frac{2}{3}}$ **and** $g\left(x\right)=-5x^{\frac{2}{3}}+1$**; then find the following:** |
| **f(x) + g(x) f(x) – g(x)****f(x) + g(x):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ f(x) – g(x):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **For #6, find the solution(s) to the following equation:** $\left(3x\right)^{\frac{4}{3}}=81$ |
| **x = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **For #7, find the solution(s) to the following equation:** $\sqrt{x}+1=\sqrt{3x-3}$ |
| **x = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

**ANSWERS**

1. D 2. B. 3. A. 4. B 5. B 6. C 7. B 8. C

9. D 10. A 11. C 12. D 13. B 14. C 15. D 16. A

17. C 18. A 19. B 20. D 21. A



**FREE RESPONSE ANSWERS**

1. Vertex: (-1, 3) AoS: x = -1 Maximum @ 3

2. Discriminant: -92 Nature of Zeros: 2 imaginary roots 3. Cost: $137.50; 275 Books Sold; Profit: $37,812.50

4. Zeros: x = -2, 1, ±3i 5. f(x) + g(x) = $-3 \sqrt[3]{x^{2}}+3x+1$ f(x) - g(x) = $7 \sqrt[3]{x^{2}}+3x+1$

6. x = ±9 7. x = 4