

Practice Problems for CE Math 1010 Midterm – Key and Rubric

Total points		Answer	Rubric		Associated with
3 pts	1.	$y = 2x + 10$	1 pt 2 pts	for substituting in slope correctly for correctly finding b and writing equation in correct form	#7
2 pts	2.	$6x^3 - 4x^2 - 2x$	2 pts	All or nothing	#3, #28
2 pts	3.	$3x^3 + 7x^2 - 3x - 10$	2 pts	All or nothing	#2, #28
5 pts	4.	$[-3, 4)$	2 pts 3 pts	Correct graph; all or nothing All or nothing; Correct interval notation	#27
3 pts	5	$(6, 0)$	3 pts	All or nothing	
3 pts	b)	$(0, 4)$	3 pts	All or nothing	
2 pts	c)	$m = -\frac{2}{3}$	2 pts	All or nothing	
3 pts	6.	Decreasing because the slope is negative	1 pt 2 pts	For stating increasing or decreasing correctly For justification	
5 pts	7.	$f(x) = 24,000 - 1100x$ or $f(x) = -1100x + 24,000$	5 pts	Award all points for correct answer with supporting work <u>If answer is not correct:</u> 3 pts for correct slope somewhere in work	#1
4 pts	8.	$2xy^4\sqrt{xy^2z}$	1 pt 1 pt 1 pt 1 pt	For correct simplification of constant For correct exponent on x For correct exponent on y For correct exponent on z	#9, #19
3 pts	9.	$2x^{5/4}y^{7/4}z^{1/4}$ or $16^{1/4}x^{5/4}y^{7/4}z^{1/4}$	1 pt 2 pt	Any indication that students understand fourth root is the same as one fourth power Answer is completely correct	#8, #19
4 pts	10.	See student graph. $m = -\frac{3}{2}$ and $b = -1$	1 pt 2 pts	Correct intercept Correct slope	
3 pts	b)	See student work. All y values in table should be -2 and the line should be $y = -2$	2 pts 1 pt	Correct values in table Correct graph	
2 pts	c)	Graph of any relation that is not a function	1 pt	All or nothing	
2 pts	11.	$2^3\sqrt{y}$	2 pts	All or nothing	#12, #29
2 pts	12.	$2\sqrt{3xy + \sqrt{15xz}}$	2 pts	All or nothing	#11, #29
3 pts	13.	$f(1) = a \cdot 1 - 2 = 8; a = 10$	2 pts 1 pt	Correct substitution Correct simplification	#23
3 pts	14.	No, the solution does not satisfy the second equation	3 pts	Award all points for correct answer with supporting work <u>If answer is not correct:</u> 1 pt for correctly substituting solution into at least one equation. 0 pts for bald answer with no justification	#22

4 pts	15.	$\frac{2y^5z^3}{3x^4}$	1 pt 1 pt 1 pt 1 pt	For correct simplification of constant For correct exponent on x For correct exponent on y For correct exponent on z	
3 pts	16.	Sometimes. The statement is true if $x = 0$ otherwise it is false	1 pt 2 pts	For answering "sometimes" For correct explanation.	#20
2 pts	17.	$\sqrt[12]{y^5}$	1 pt	All or nothing	
2 pts	18.	a) $\sqrt{2x - 5} = 9$	2 pts	All or nothing	#26
5 pts	19	$\frac{2\sqrt{2x}}{x}$	5 pts	Award full credit for correct answer with supporting work <i>If answer is not correct:</i> 3 pts for correctly multiplying by an appropriate form of 1.	#8, #9
2 pts	20.	$y^2 + 10y + 25$	2 pts	All or nothing	#16
4 pts	21.	$m^2 + 7m - 9 - \frac{2}{m - 2}$	4 pts	Award full credit for correct answer with supporting work <i>If answer is not correct:</i> 2 pts for finding correct first term in the quotient	
2 pts 2 pts 3 pts 2 pts	22. a) b) c) d)	Slope is the cost per mile y-intercept is the cost to rent the car if you drive 0 miles (175,2150) The solution shows where the cost is the same for both rentals	2 pts 2 pts 3 pts 1 pt 1 pt	Correct interpretation of the slope Correct interpretation of the y-intercept Award full credit for correct answer with supporting work <i>If answer is not correct:</i> 1 pt for correct first step to solve with either substitution or elimination Correct explanation For including the context of the problem in the answer	#14
1 pt 2 pts 3 pts 3 pts	23. a) b) c) d)	$A(12) = 495$ How many gallons are left 12 hours after the pool starts leaking [0,23] [0,1035]	1 pt 2 pts 3 pts 3 pts	All or nothing All or nothing All or nothing. Answer may be written in any form All or nothing. Answer may be written in any form	#13
3 pts	24.	Students must indicate both that table shows a linear pattern AND that there is a constant rate of change.	3 pts	All or nothing. 0 pts if both concepts are not included	
2 pts	25.	Students must indicate both that there is no solution AND that the lines are parallel.	2 pts	All or nothing. 0 pts if both concepts are not included	

3 pts	26.	$x = 3$	3 pts	Award full credit if the answer is correct with supporting work <i>If answer is not correct AND the radical has been isolated:</i> 1 pt for raising both sides to the appropriate power	#18
4 pts	27.	$(-7, -5]$	4 pts	Award full credit if the answer is correct with supporting work. <i>If answer is not correct:</i> 1 pt for correctly adding constant appropriately. Can be either implicit or explicit <i>THEN:</i> 1 pt for dividing by a negative number AND switching the direction of the inequalities.	#4
3 pts	28.	$3x^3 + 10x^2 - 9x - 4$	3 pts	All or nothing	#2, #3
3 pts	29.	$8\sqrt[3]{2y} + \sqrt[3]{12}$	3 pts	All or nothing	#11, #12