# MATH 100 PRACTICE FINAL EXAM 

Lecture Version

Name: $\qquad$
ID Number:
Instructor:
Section:

## Do not open this booklet until told to do so!

On the separate answer sheet, fill in your name and identification number and code the appropriate spaces with a No. 2 pencil. Use the spaces marked "Year" under Birth Date to code the version of the exam you are taking.

The exam has 50 multiple choice questions. Select the one best answer for each problem. Use a No. 2 pencil to mark your answers on the answer sheet. Be sure to clearly mark your answer with a heavy mark. Should you change an answer, be sure to erase your original answer completely.

The test booklet has a limited amount of space with each problem. If the space is not sufficient to show your work, use the back of the previous page. Label your work. Mark your answer in the exam booklet and on the answer sheet. Answer all questions. There is no penalty for guessing.

Good Luck!

1. Solve the linear equation
2. 

$$
\frac{1}{5}(10 x-20)=x-3
$$

a) $\{-1\}$
b) $\{17\}$
c) $\{3\}$
d) $\{1\}$
2. Decide whether the equation is an identity, a conditional equation, or a 2. contradiction.

$$
2(3 x-4)=6 x+5
$$

a) identity
b) conditional equation
c) contradiction
d) none of these
3. The formula for the perimeter of a rectangle is given by $P=2 l+2 w$,
3. where $l$ is the length and $w$ is the width. Assume the perimeter of a rectangular plot of land is 480 ft . The length is twice the width. Find the length of the rectangular plot of land.
a) 80 ft
b) 120 ft
c) 160 ft
d) 240 ft
4. A car dealership uses the linear model $y=-1100 x+25000$ to
4. predict the depreciation of car values as time progresses. If $x$ is how old the vehicle is in years and $y$ is the current value of the vehicle, what will the value of the vehicle be 5 years after purchase?
a) $\$ 18,400$
b) $\$ 19,500$
c) $\$ 22,700$
d) $\$ 23,900$
5. Find the following sum.

$$
7\left(3 x^{2}+2 x-5\right)+2\left(-x^{2}+3\right)
$$

a) $20 x^{2}+14 x-32$
b) $19 x^{2}+2 x-2$
c) $28 x^{2}+14 x-28$
d) $19 x^{2}+14 x-29$
6. Find the following product.
6.

$$
(1-3 x)\left(x^{2}+2 x-5\right)
$$

a) $-3 x^{3}-5 x^{2}+17 x-5$
b) $x^{2}-x-4$
c) $-3 x^{3}+7 x^{2}+13 x-5$
d) $-7 x^{2}+17 x-5$
7. Factor out the greatest common factor from the following polynomial.
7.

$$
3 a^{7} b^{3}-21 a^{4} b^{3}
$$

a) $a^{4} b^{3}\left(3 a^{3}-21\right)$
b) $3 a^{4} b^{3}\left(a^{3}-7\right)$
c) $a^{4} b^{3}\left(3 a^{3} b-21 a b\right)$
d) $3 a^{4} b^{3}\left(a^{3} b-7 a b\right)$
8. Factor the following polynomial by grouping.
8.

$$
15 a b-6 b+10 a-4
$$

a) $(3 b+2)(5 a-2)$
b) $(3 b-2)(5 a+2)$
c) $(3 b+2)(5 a+2)$
d) $(3 b-2)(5 a-2)$
9. Factor the following trinomial.
9.

$$
6 x^{2}+11 x-10
$$

a) $(3 x-2)(2 x-5)$
b) $(3 x+2)(2 x-5)$
c) $(3 x-2)(2 x+5)$
d) $(x+6)(11 x-10)$
10. Factor the following polynomial.

$$
25 x^{2}+40 x+16
$$

a) $(5 x+4)(5 x-4)$
b) $(5 x+4)(5 x+4)$
c) $(5 x-4)(5 x-4)$
d) $(x+40)(25 x+16)$
11. Write the following complex number in standard form $a+b i$.
11.

$$
\frac{-24+\sqrt{-126}}{3}
$$

a) $-8+14 i$
b) $-8-i \sqrt{14}$
c) $-8+i \sqrt{126}$
d) $-8+i \sqrt{14}$
12. Find the sum or difference. Write the answer in standard form $a+b i$.
12.

$$
(3-5 i)-(-5+11 i)+(9+6 i)
$$

a) $7+12 i$
b) $7-10 i$
c) $17+12 i$
d) $17-10 i$
13. Find the numerator of the quotient. Write the answer in standard form
13. $a+b i$.

$$
\frac{5-3 i}{2+7 i}
$$

a) $-11-41 i$
b) $31+21 i$
c) $16-30 i$
d) $11+41 i$
14. Solve the following quadratic equation by the zero-factor property.
14.

$$
3 x^{2}-x=14
$$

a) $\{-2\}$
b) $\left\{2,-\frac{7}{3}\right\}$
c) $\left\{-2, \frac{7}{3}\right\}$
d) $\{-2,2\}$
15. Solve the following quadratic equation by the square root property.
15. $\qquad$

$$
(2 x-1)^{2}=9
$$

a) $\{-1\}$
b) $\{2\}$
c) $\{-1,2\}$
d) No solutions
16. Solve the following quadratic equation by completing the square
16.

$$
9 x^{2}+12 x-3=0
$$

a) $\left\{-3, \frac{5}{3}\right\}$
b) $\{1,-1\}$
c) $\left\{\frac{2}{3} \pm 6 \sqrt{7}\right\}$
d) $\left\{\frac{-2 \pm \sqrt{7}}{3}\right\}$
17. The Pythagorean Theorem for a right triangle is $a^{2}+b^{2}=c^{2}$, where
17. $\qquad$ $a$ and $b$ are the legs of the triangle and $c$ is its hypotenuse. The shorter leg is 10 inches less than the other leg, and the hypotenuse is 10 inches longer than that other leg. What is the length of the hypotenuse?
a) 30 inches
b) 40 inches
c) 50 inches
d) 60 inches
18. Bob wants to plant a 7 foot by 10 foot garden with a uniform border of
18. petunias around the outside and still have 28 square feet to plant tomatoes and roses in the middle. How wide should the border of petunias be?
a) 1.5 ft
b) 2 ft
c) 3 ft
d) 3.25 ft

