

Test 2 Review Practice

MATH 130 · Monday, October 26 · Test 2: Friday, October 30 at 2:10 p.m.

Name _____

Printed on Test 2: the compound and continuous interest formulas, the change-of-base formula and Heron's formula. Every other formula is from memory, so finish the formula page at the end without notes. Show your setup. Round only the final answer, and include units.

A · Exponentials and interest Section 4.2

$A = P(1 + r/n)^{nt}$ $A = Pe^{rt}$ (printed on the test)

- A1** \$5,000 is invested at 4.5% interest compounded monthly. Find the balance after 6 years.
- A2** The same \$5,000 is invested at 4.5% compounded *continuously* for 6 years. Find the balance. Which account earns more, and by how much?
- A3** \$2,400 is invested for 5 years at 6%. Find the balance with (a) simple interest and (b) interest compounded quarterly. How much more does (b) earn?
- A4** For each model, find the value at the given time, then state whether it shows growth or decay. (a) $W(t) = 1500(1.035)^t$, find $W(12)$ (b) $D(t) = 900(0.82)^t$, find $D(4)$

B · Logarithms Section 4.3

- B1** (a) Write $\log_3 81 = 4$ in exponential form. (b) Write $2^{-3} = 1/8$ in logarithmic form. (c) Write $16^{3/2} = 64$ in logarithmic form. (d) Write $\log_4 128 = 3.5$ in exponential form.
- B2** Evaluate without a calculator. (a) $\log_2 32$ (b) $\log 0.001$ (c) $\ln e^5$ (d) $\log_{25} 5$
- B3** Solve. Give the exact answer, then round to four decimal places. (a) $\ln x = 2.4$ (b) $\log x = -1.5$

B4 Solve. Round to four decimal places. (a) $5^x = 42$ (b) $3e^{0.2x} = 27$

B5 Use the change-of-base formula to evaluate $\log_7 50$. Round to four decimal places.

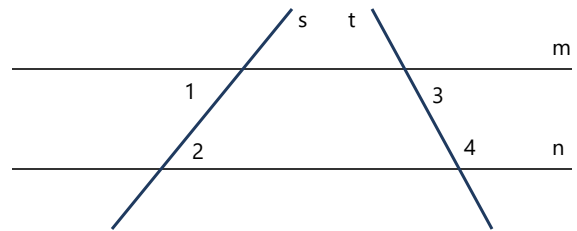
B6 Solve $e^{x-4} = 9$. Give the exact answer, then round to four decimal places.

C · Angles and polygons Geometry, part 1

C1 Lines m and n are parallel, cut by transversals s and t .

(a) On transversal s , angles 1 and 2 are **alternate interior** angles with measures $(3x + 10)^\circ$ and $(5x - 30)^\circ$. Find x and both angles.

(b) On transversal t , angles 3 and 4 are **same-side interior** angles with measures $(2x + 15)^\circ$ and $(3x + 40)^\circ$. Find x and both angles.

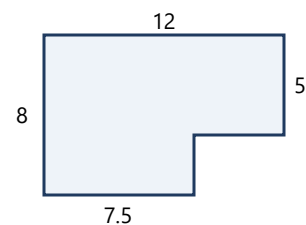


C2 (a) Find the area of a triangle with base 14 m and height 9 m. (b) Find the area of a trapezoid with parallel sides 10 in and 16 in, slanted side 8 in, and height 7 in.

C3 A triangular garden has sides 7 ft, 8 ft, and 9 ft. Use Heron's formula to find its area. Give the exact value and a decimal rounded to two places.

$A = \sqrt{s(s-a)(s-b)(s-c)}$, $s = (a+b+c)/2$ (printed on the test)

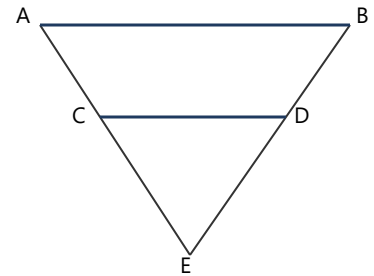
C4 Find the area of the figure. All corners are right angles; lengths are in feet.



C5 Triangle ABC is similar to triangle DEF. $AB = 6$, $BC = 9$, and $DE = 10$. Angle $A = 48^\circ$ and angle $B = 67^\circ$. (a) Find EF. (b) Find angle F.

- C6** Segment CD is parallel to segment AB. $AC = 8$, $CE = 12$, and $BD = 10$. Find DE.

Match top segment to bottom segment on each side: $AC/CE = BD/DE$



- C7** A right triangle has hypotenuse 17 cm and one leg 8 cm. Find the other leg and the area.

D • Circles, radians, and solids Geometry, part 2

- D1** Convert $47^{\circ}23'42''$ to decimal degrees. Round to four decimal places.
- D2** Convert 128.4675° to degrees, minutes, and seconds.
- D3** (a) Convert 225° to radians (exact, in terms of π). (b) Convert $7\pi/6$ radians to degrees. (c) Convert 2.8 radians to degrees; round to two places.
- D4** A circle has radius 9 cm. A central angle of 140° cuts off an arc. Find (a) the arc length and (b) the area of the sector. Give exact answers and decimals to two places.
- D5** An arc 15 ft long lies on a circle of radius 6 ft. Find the central angle in radians and in degrees (two places).
- D6** (a) Central angle AOC measures 110° . Point B is on the major arc. Find inscribed angle ABC.
(b) Two chords intersect inside a circle. The arcs intercepted by the angle and its vertical angle measure 64° and 98° . Find the angle.
- D7** (a) Find the exact circumference and area of a circle with radius 7 in.
(b) A circular pond has radius 10 ft. A path 3 ft wide surrounds it. Find the area of the path (exact and to two places).

- D8** A bicycle wheel has a diameter of 26 inches and turns at 300 revolutions per minute. (a) Find its angular speed in radians per minute. (b) Find the bicycle's speed in miles per hour (1 mi = 5280 ft; 1 ft = 12 in). Round to two places.
- D9** A cylinder has radius 4 cm and height 10 cm. Find (a) its volume and (b) its total surface area. Give exact answers and decimals to two places.

Formula page — from memory

Fill this in without notes. Then check it against the Test 2 review page and fix anything you missed in a different color.

Simple interest

Compound interest

Continuous compounding

Log $\leftrightarrow$ exponential form

$\ln x = c$ and $\log x = c$

Change of base

Growth or decay from the base

Triangle area

Trapezoid area

Heron's formula (with s)

Parallel lines: segment
proportion

DMS $\rightarrow$ decimal degrees

Decimal degrees $\rightarrow$ DMS

Degrees $\leftrightarrow$ radians

Arc length (radians and
degrees)

Sector area (radians and
degrees)

Central angle; inscribed angle

Intersecting chords angle

Linear and angular speed

Cylinder volume and surface
area