ACT Desmos quickstart

Learn the online ACT calculator with worked examples for equations, graphs, functions and angle mode, plus eight practice tasks and explained answers.

SHARP

Open the ACT calculator

On the online ACT, Desmos is built into the Math section. If you are taking the paper test, practice with your permitted handheld calculator; a separate phone or computer is not an allowed calculator. See ACT's calculator policy.

For practice, open desmos.com/practice, select **Choose Assessment → ACT (ACT and PreACT)**, then **Graphing Calculator ACT Version → Start Practice**. Use this version for the examples below.

Get comfortable with the controls

Type in the expression list on the left. Graphs appear on the right. The keypad opens at the bottom; the plus button adds items such as tables. Use the wrench to open Graph Settings, including angle units and axis bounds. If a point is outside the visible graph, zoom out or change the bounds.

To enter	Type / check
A power	Type x^2. Press the right arrow to leave the exponent before continuing.
A fraction	Use /, then the right arrow to leave the denominator. Put a multi-term numerator in parentheses.
A square root	Type sqrt, enter the number, then move out of the root.
A negative input	Type (−3)^2 for 9. Without parentheses, −3^2 is −9.
A new expression	Press Enter after the current expression.

The ACT configuration defaults to degrees. Confirm the units before trig work; a radian question needs radians. The ordinary Desmos calculator and the SAT version have different settings.

These examples and exercises are original Sharp practice. Use the sheet while studying, not as material to bring into the testing room. The following pages show both what to enter and how to interpret the result.

Solve equations and systems

One unknown: graph each side

To solve 3(x − 2) = x + 8, enter one side on each line:

```
y=3(x-2)
```

```
y=x+8
```

Select a line, then select the gray point where the lines cross. The intersection is **(7, 15)**, so **x = 7**. The y-value is what both expressions equal; it is not the solution requested.

Check: 3(7 − 2) = 15 and 7 + 8 = 15. By hand, 3x − 6 = x + 8 gives 2x = 14. For short equations like this, algebra is also a quick option.

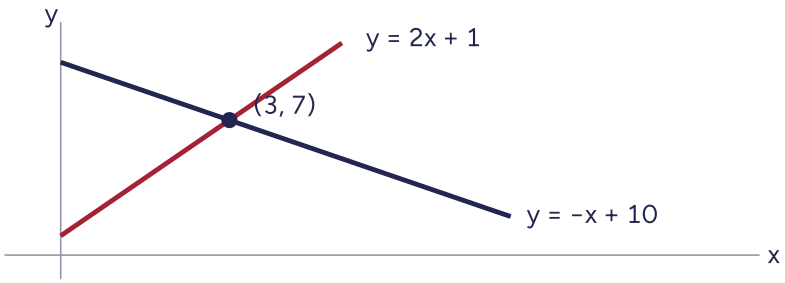
Two unknowns: keep the ordered pair

For the system below, enter each equation on its own line:

```
y=2x+1
```

```
y=-x+10
```

The intersection is **(3, 7)**. If the question asks for y, answer 7. If it asks for x + y, answer 10. Check both equations: 2(3) + 1 = 7 and −3 + 10 = 7.



Schematic of the intersection. Use the coordinate label in the calculator, rather than estimating from a drawing.

An empty window does not prove there is no solution. Check the input and zoom before drawing a conclusion. When a line meets a curve, look for every intersection and apply any domain restrictions in the question.

Read a quadratic and evaluate a function

Zeros and maximum values answer different questions

`y=-x^2+8x+9`

Select the curve, then its gray points. The x-intercepts are **(−1, 0)** and **(9, 0)**, so $-x^2 + 8x + 9 = 0$ has solutions -1 and 9. The vertex is **(4, 25)**. The maximum *value* is 25; it occurs at $x = 4$. Set the upper y-bound above 25 if the vertex is outside your window.

Check: $-x^2 + 8x + 9 = -(x - 4)^2 + 25$. The squared term cannot be negative, so subtracting it gives a value no greater than 25. Substituting -1 or 9 gives 0.

To solve $-x^2 + 8x + 9 = 16$ instead, add `y=16` and use its intersections with the curve. The x-intercepts answer the equation with 0 on the other side.

Define a function once, then give it inputs

`f(x)=x^2-3x+4`

`f(-2)`

The result is **14**: $(-2)^2 - 3(-2) + 4 = 4 + 6 + 4$. Keep the negative input in parentheses when you check by hand.

To compare several inputs, choose **Add Item (+)** → **Table**. Put −2, 0 and 3 in the x_1 column. Replace the second column heading with `f(x_1)` : type `f(x_1` , press the right arrow to leave the subscript, then type the closing parenthesis. Desmos fills the outputs:

x_1	$f(x_1)$
-2	14
0	4
3	4

A table checks the inputs you enter. Matching a few rows does not prove two expressions are equal for every x. If a question supplies a table, test each given row before choosing a matching rule.

Choose the angle units before calculating

The ACT calculator starts in degrees, according to Desmos's ACT configuration sheet. Open Graph Settings and check **Degrees** or **Radians** to match the question.

A side from an angle in degrees

In a right triangle, an angle measures 35° and its adjacent leg is 12 cm. Find the opposite leg h. Tangent uses opposite ÷ adjacent, so tan 35° = h/12 and h = 12 tan 35°.

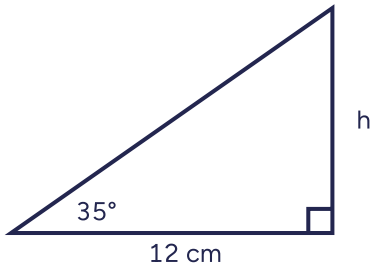


Diagram not to scale. The 12 cm leg is adjacent to the 35° angle; h is opposite it.

In **degree mode**, enter:

```
12tan(35)
```

The result is about **8.40249**, so h is **8.4 cm** to the nearest tenth. If the answer choices are expressions, 12 tan 35° already answers the question; you may not need a decimal.

A question in radians

To evaluate sin(π/6), switch to **radian mode** and enter `sin(pi/6)`. The result is **0.5**, because π/6 radians is 30°. The same input in degree mode interprets π/6 as about 0.524 degrees.

Before the next trig question, check its units again. For a degree check, `sin(30)` should give 0.5. A familiar-looking decimal is not enough to establish that the mode is right.

Primary references, checked November 5, 2026: ACT calculator policy; Desmos ACT settings, SY2026–2027; ACT calculator tutorials. Practice with the ACT test calculator before trying the exercises.

Practice: equations and graphs

Try these original tasks in the ACT practice calculator. Record the input, the result and a check by substitution or algebra. These are skill exercises, not a scored ACT section.

1. Solve an equation

Find x if $4(x - 1) = 2x + 10$. Write the two expressions you would graph and the x-value of their intersection.

2. Read the requested coordinate

For $y = 3x - 2$ and $y = -x + 14$, what is the y-value of the solution? Record the ordered pair before answering.

3. Find a maximum

What is the maximum value of $y = -2x^2 + 12x - 7$? Record both coordinates of the vertex and identify which answers the question.

4. Find both roots

Solve $x^2 - 5x - 6 = 0$. Give both solutions and their sum. Check each solution in the original equation.

Practice: functions and angle units

Keep your work visible. For the trig questions, write the angle mode before entering the expression.

5. Evaluate a negative input

If $f(x) = 2x^2 - x + 3$, what is $f(-2)$? Write a substitution with parentheses as a check.

6. Build a table

A cost is modeled by $C(x) = 3x + 5$ dollars for x items. Use a table to find the costs for 1, 2 and 4 items. Which value is the cost for 4 items?

7. Choose a trig ratio

In a right triangle, a 28° angle has an adjacent leg of 18 cm. Find the opposite leg, to the nearest tenth of a centimeter. Record the mode and the expression you use.

8. Switch units deliberately

Evaluate $\sin(5\pi/6)$, where the angle is in radians. Record the mode and the answer. Then set the calculator to degrees and verify $\sin(30)$.

Answers and explanations

1. x = 7

Graph `y=4(x-1)` and `y=2x+10`. They meet at (7, 24). Substitution gives 4(6) = 24 and 2(7) + 10 = 24. By hand, 4x − 4 = 2x + 10 gives 2x = 14. Do not report the y-value, 24.

2. y = 10

The lines meet at (4, 10). Both 3(4) − 2 and −4 + 14 give 10. The question asks for y, so 4, the x-coordinate, is not the answer.

3. The maximum is 11

The vertex is (3, 11). Completing the square gives $-2(x-3)^2 + 11$, which cannot exceed 11. The input 3 tells you where the maximum occurs. Zoom or change the y-bound if 11 is above the window.

4. −1 and 6; their sum is 5

Graph `y=x^2-5x-6` and read both x-intercepts. Factoring gives (x − 6)(x + 1) = 0. Substitution gives 1 + 5 − 6 = 0 and 36 − 30 − 6 = 0. Neither the vertex nor the y-intercept is a root.

5. f(−2) = 13

Define `f(x)=2x^2-x+3`, then enter `f(-2)`. Check: $2(-2)^2 - (-2) + 3 = 8 + 2 + 3 = 13$. Squaring without parentheses or subtracting 2 instead of −2 changes the result.

6. $8, $11 and $17; four items cost $17

Define `f(x)=3x+5`. Use 1, 2 and 4 as x_1 values and `f(x_1)` as the second column heading. The outputs are 8, 11 and 17. Check the last row: 3(4) + 5 = 17. The fixed $5 is added once.

7. About 9.6 cm, using degrees

Opposite ÷ adjacent is tangent: h = 18 tan 28°. Enter `18tan(28)` in degree mode to get about 9.57077. Sine would require the hypotenuse, which is not the given side.

8. 0.5 in radians; the degree check also gives 0.5

In radian mode, `sin(5pi/6)` is 0.5. The angle is 150°, with a 30° reference angle and positive sine. After changing to degrees, `sin(30)` is 0.5.

Choose one task you found difficult and redo it without the solution. Use the ACT Math formulas and practice for more work on the underlying math.