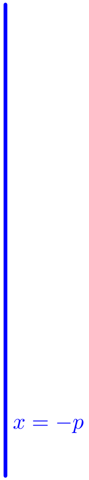
준선이 $x = -p$ 이고 초점이 $(p, 0)$ 일 때, 포물선 상의 점 (x_1, y_1) 에서의 접선의 방정식을 구하여라.[기하적 접근]
((When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).)

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End

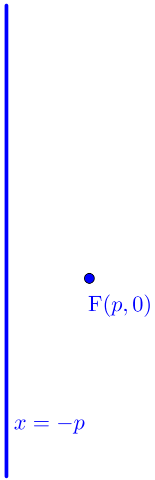
(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End



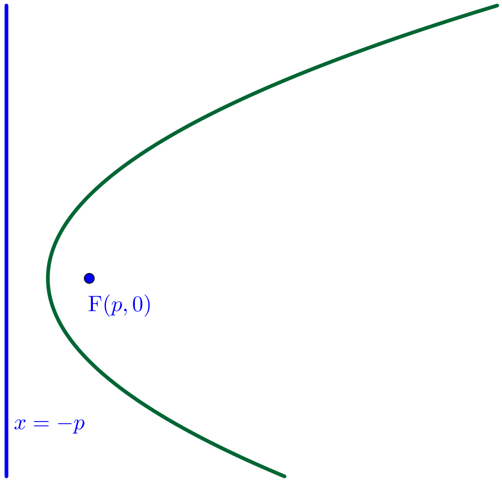
(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End



(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

▸ Start ▸ End



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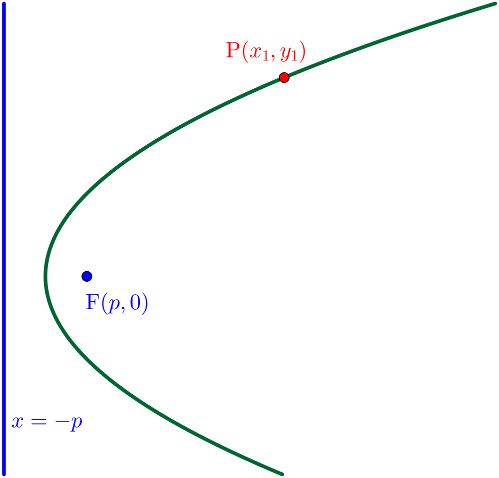

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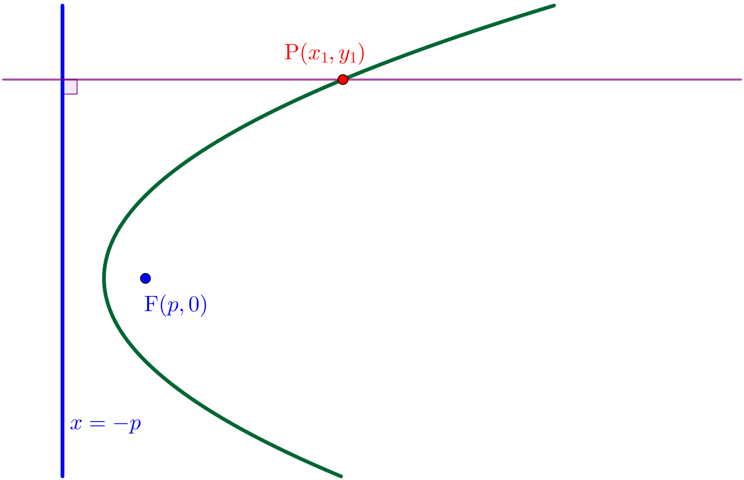
▸ Start ▸ End



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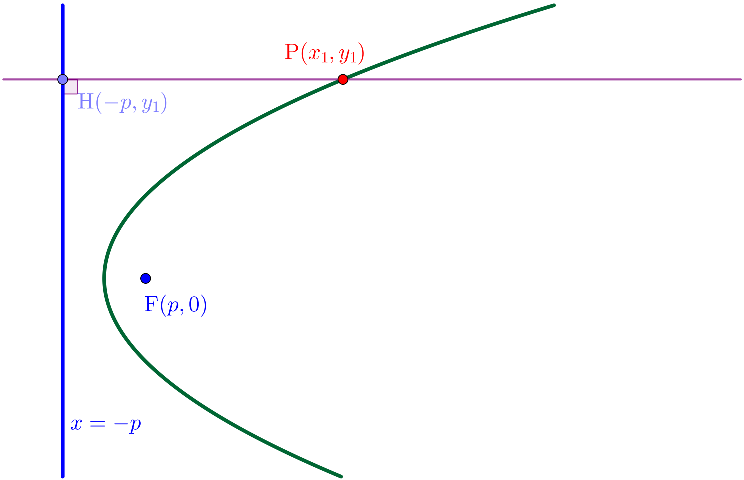
Start End



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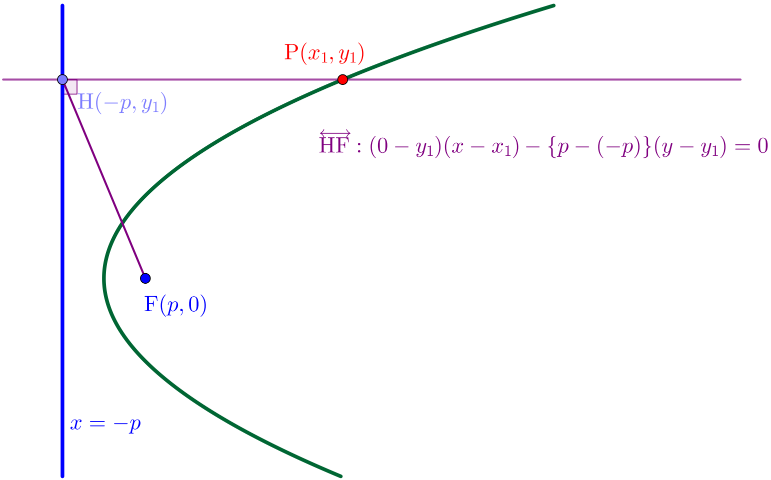
▸ Start ▸ End



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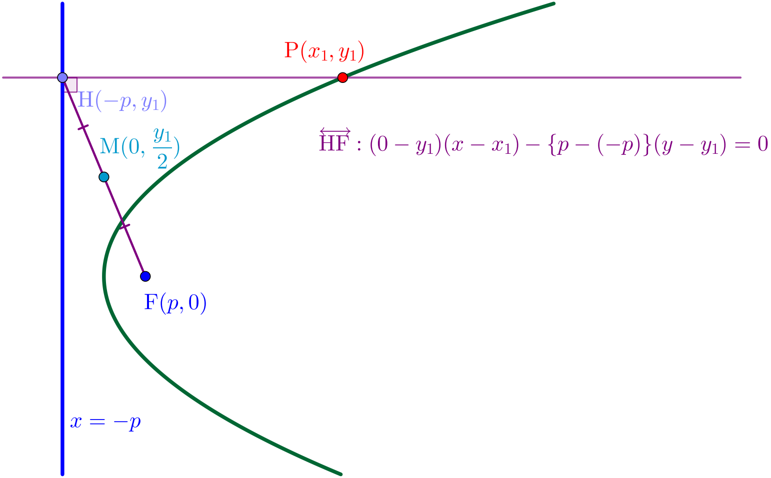
▸ Start ▸ End



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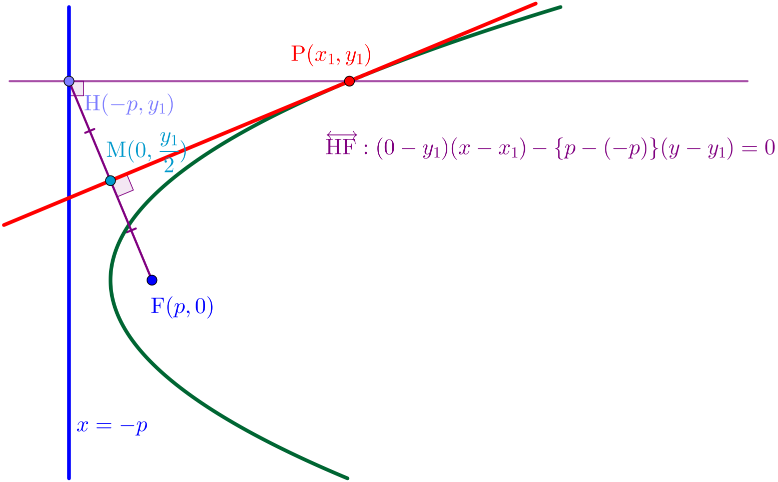

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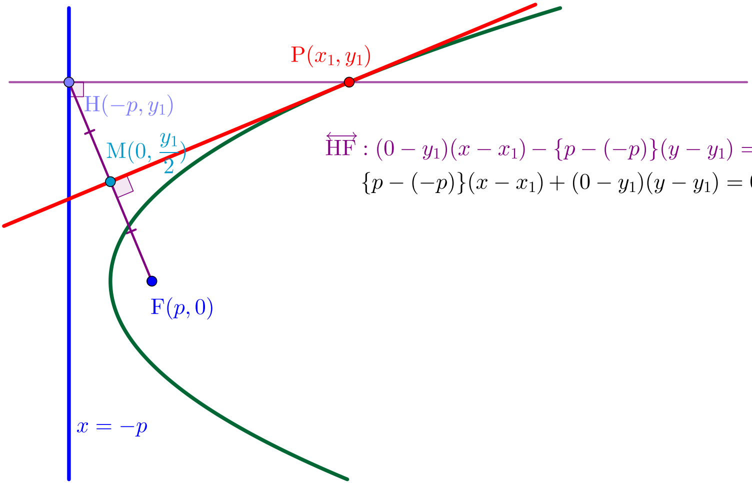
Start End

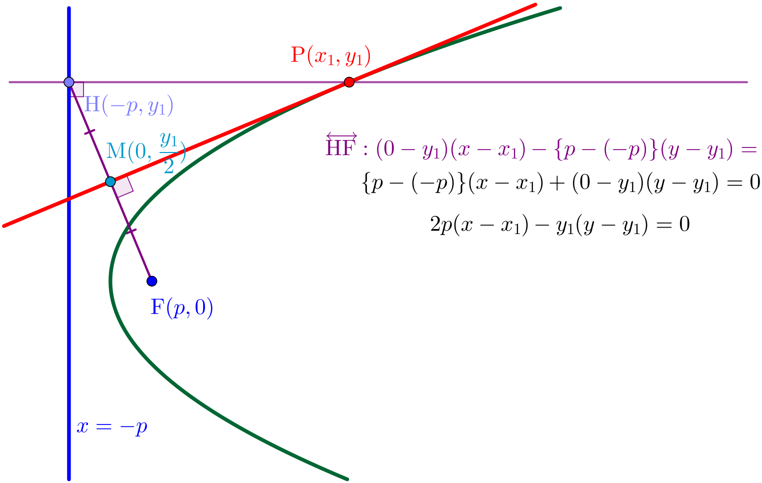


$\overleftrightarrow{\mathrm{HF}} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$

$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

▸ Start ▸ End



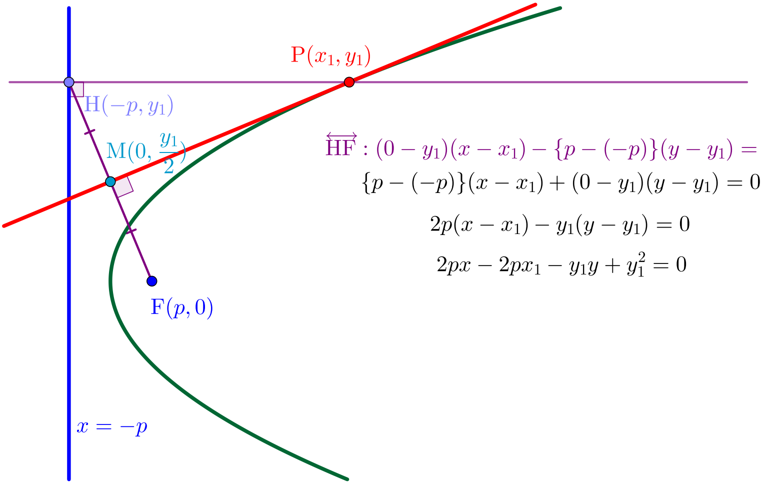
$\overleftrightarrow{\mathrm{HF}}$: $(0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$

$$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$$

$$2p(x - x_1) - y_1(y - y_1) = 0$$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End



$$\overleftrightarrow{HF} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$$

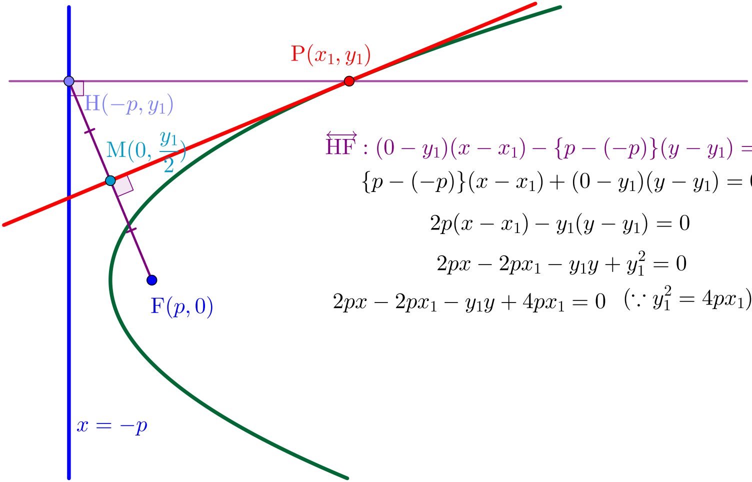
$$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$$

$$2p(x - x_1) - y_1(y - y_1) = 0$$

$$2px - 2px_1 - y_1 y + y_1^2 = 0$$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End



$$\overleftrightarrow{\mathrm{HF}} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$$

$$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$$

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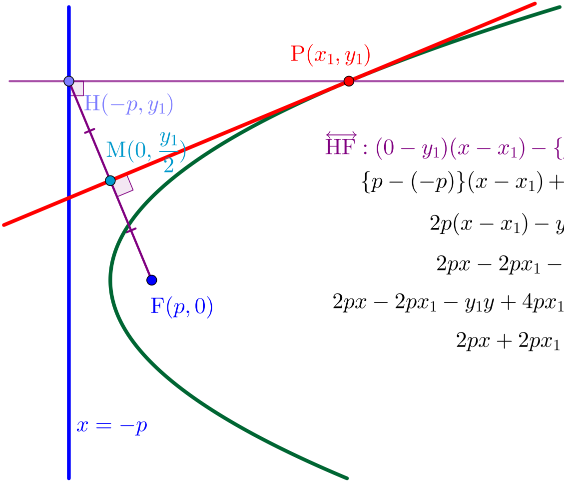
$$2px - 2px_1 - y_1 y + 4px_1 = 0 \quad (\because y_1^2 = 4px_1)$$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).



$$\overleftrightarrow{\mathrm{HF}} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$$

$$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$$

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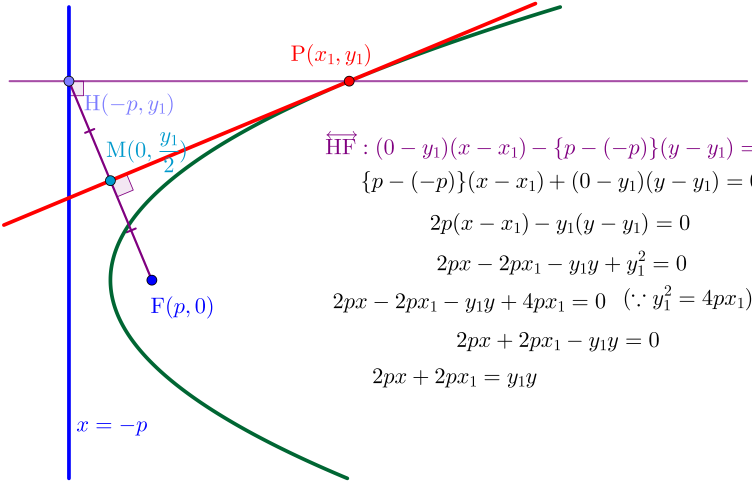
$$2px - 2px_1 - y_1 y + 4px_1 = 0 \quad (\because y_1^2 = 4px_1)$$

$$2px + 2px_1 - y_1 y = 0$$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

▸ Start ▸ End



$$\overleftrightarrow{\mathrm{HF}} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$$

$$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$$

$$2p(x - x_1) - y_1(y - y_1) = 0$$

$$2px - 2px_1 - y_1y + y_1^2 = 0$$

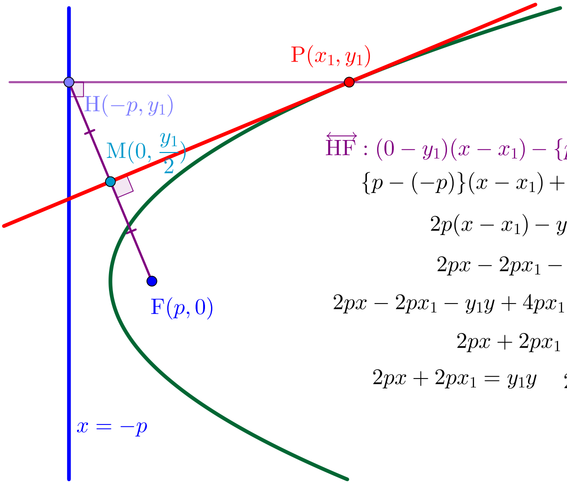
$$2px - 2px_1 - y_1y + 4px_1 = 0 \quad (\because y_1^2 = 4px_1)$$

$$2px + 2px_1 - y_1y = 0$$

$$2px + 2px_1 = y_1y$$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End



$$\overleftrightarrow{HF} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$$

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$$2px - 2px_1 - y_1 y + y_1^2 = 0$$

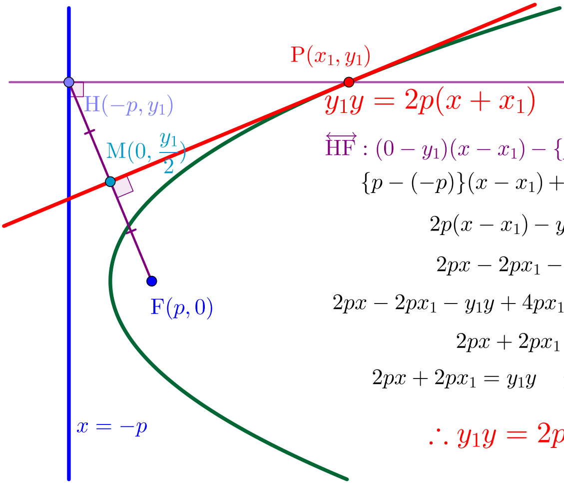
$$2px - 2px_1 - y_1 y + 4px_1 = 0 \quad (\because y_1^2 = 4px_1)$$

$$2px + 2px_1 - y_1 y = 0$$

$$2px + 2px_1 = y_1 y \qquad 2p(x + x_1) = y_1 y$$

(When a directrix is $x = -p$ and a focus is $(p, 0)$, find the equation for the tangent line to the parabola at a given point (x_1, y_1).

Start End



$$y_1 y = 2p(x + x_1)$$

$$\overleftrightarrow{\mathrm{HF}} : (0 - y_1)(x - x_1) - \{p - (-p)\}(y - y_1) = 0$$

$$\{p - (-p)\}(x - x_1) + (0 - y_1)(y - y_1) = 0$$

$$2p(x - x_1) - y_1(y - y_1) = 0$$

$$2px - 2px_1 - y_1 y + y_1^2 = 0$$

$$2px - 2px_1 - y_1 y + 4px_1 = 0 \quad (\because y_1^2 = 4px_1)$$

$$2px + 2px_1 - y_1 y = 0$$

$$2px + 2px_1 = y_1 y \qquad 2p(x + x_1) = y_1 y$$

$$\therefore y_1 y = 2p(x + x_1)$$

Github:
https://min7014.github.io/math20220301001.html

Click or paste URL into the URL search bar, and you can see a picture moving.